

MARCH
1954

for men who manage
**chemical
processing**

Highlights

medical ideas were
with ACTH — for the
of its development
page 6

analyze hydro-
ions in 5 minutes . 96

ends off this month's 10
ideas for practical laboratory
management

ny nozzles that lasted
months now last 5 years
..... 106

of 17 corrosion reports
this issue

PUBLISHING CO., CHICAGO

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Armour and Company's F. W. SPECHT
PIONEER of PROGRESS—Pharmaceuticals

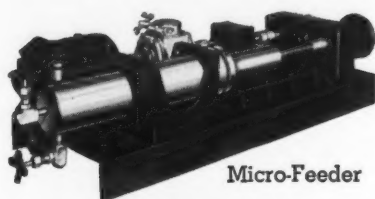
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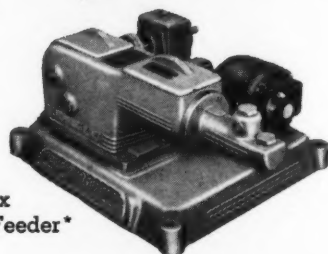
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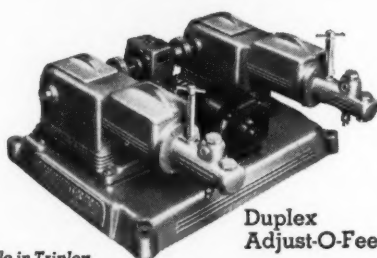
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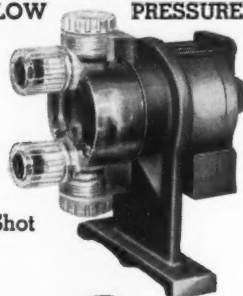


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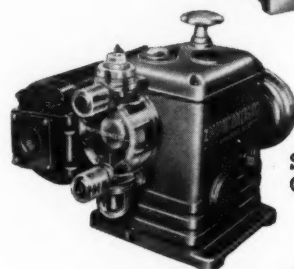
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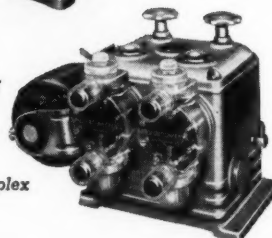


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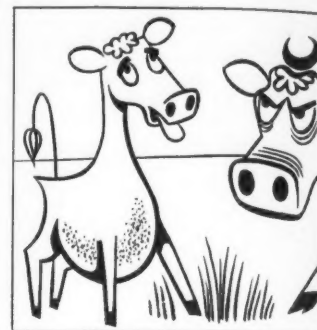


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(CHEMICAL PROCESSING PREVIEW)

For MEN WHO MANAGE

Vol. 17

March, 1954

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FLOWLINE Welding Fittings are handled throughout the country by leading distributors who sell everything for corrosion-resistant piping—fittings, valves, pipe, and accessories. This phase of our specialization in corrosion-resistant fittings helps users obtain "on-the-job" service and take fullest advantage of the economy and efficiency of simplified welded construction.

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Seeing the forest



"He can't see the forest for the trees." How many times have you heard that expression? And yet, even though we are working right in the midst of chemical industry, each of us is busy with the three or four "trees" that need special attention at the moment. Editors are no exception.

Because there are so many specialized fields to claim our reading (and writing) time, it's a pleasant task to do articles like the "Pioneer of Progress" series. These articles are intended to present what has been called "the big picture." While you probably won't find an answer for an immediate problem in them, they may help you to stand back and take a broad view of what all of us are accomplishing.

Nor is this study of the forest — rather than the trees — without importance. While the late Professor McCormack was alive he used to point out that the "chemical century" really got started only 50 years ago. Chemical processing achievements are still in the early stages of changing the world, but changing it they are. Witness the changes of these past 50 years . . . or try to imagine those of the next 50.

Bruce Fader

ASSOCIATE EDITOR

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3. If you want to subscribe to this magazine, see reader-qualification form opposite page 3

The Chemical Age

Mr. Charles S. Munson, Chairman of the Board,
Air Reduction Co., Inc.



Mr. Munson received his BA from Yale University in 1912. In 1917, after five years with another company, he began his association with what is now Air Reduction Co., Inc. as treasurer of Cuban Air Products Corp. In 1924 he became a vice president of Air Reduction. From 1937 until 1948 he served as President, and has been Chairman of the Board since 1949.

Mr. Munson is director or trustee of numerous corporations, including: Manufacturing Chemists' Association, Chairman of the Board of Directors; National Distillers Products Corp., member of the Finance Committee and Director; Ohio Chemical Canada, Ltd., Director; and Penick & Ford, Ltd., Inc., Director and member of Executive Committee.

In considering for a few moments the significance of "Applied Chemistry" in the world of tomorrow, I should like to invite your attention to a recent news item. The item to which I have reference appeared in the financial pages of the Christian Science Monitor, and read in part as follows:

"At different periods in history, narrators have spoken of the stone age, the age of brass, the steel age — a good case can be made for calling the current period the chemical age. Hardly a day passes without the announcement of some new chemical product, some advancement in the field of organic or inorganic chemistry, which affects the lives of all directly or indirectly."

Let us then consider applied chemistry in this chemical age — an age which can be, and should be, the fulfillment of mankind's age-old dream of peace and prosperity, if mankind is wise enough to make it so — and an age which can be the graveyard of civilization, if mankind does not rise to the moral challenge of these times.

On the hopeful side, we see chemistry being applied to the betterment of human welfare in such ways as:

A more adequate food supply for the world's mushrooming population;

Better fabrics with which mankind can clothe itself;

A wide range of plastics and other man-made materials for homes and buildings — thus rounding out chemistry's contribution to the vital trinity of food, clothing and shelter;




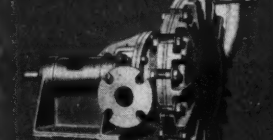

New wonder drugs which have already put an end to a great range of diseases, and which give promise of eradicating still more diseases.

But, even as the achievements of chemistry give us new hope for the world of tomorrow, we face the stark reality of the hydrogen or thermo-nuclear weapons of war, which could annihilate the world. We have split the atom; can we keep the atom from splitting us?

If our civilization survives, and I believe it will, we shall thrive. For the negative features of atomic

(Continued on page 210)

Find the Best Pump for Your Process Job Here—

TYPE	APPLICATION	SIZE RANGE	SPECIAL FEATURES
 SSB Single suction Frame mounted Grease lubricated Also available close-coupled Frame Mounted: 5286351, 5286105 Close-coupled: 5286083, 5286140	General purpose use	Heads to 550 feet. Capacities to 3500 gpm. Temperatures to 250 F.	Available in many materials. Choice of packing, single or double mechanical seal. Bearings protected from corrosive or abrasive atmosphere.
 SSB Single suction Frame mounted Oil lubricated 5287638, 5286105 (Multi-stage)	Chemical, petroleum and general purpose use in medium high temperature range	Heads to 550 feet. Capacities to 3500 gpm. Temperatures to 550 F.	Available in many materials. Choice of packing, single or double mechanical seal. Stuffing box cooled above 250 F.
 Refinery Type R Single suction Frame mounted Oil lubricated 5287775	Volatile liquids and high temperature process applications requiring heavy duty refinery type pump	Heads to 600 feet. Capacities to 1300 gpm. Temperature to 800 F.	Available in many materials. Choice of packing, single or double seals. Stuffing box, bearings, and pedestal may be water cooled.
 P and PD Single suction Frame mounted Grease lubricated 5286615	Handling fine abrasives in suspension or corrosive liquids	Heads to 260 feet. Capacities to 1300 gpm. Temperatures to 250 F.	Stuffing boxes on suction side. Choose packing, mechanical seal or Equiseal stuffing box — stops leakage to 15 feet suction head. Open or closed impeller.
 PW — CW Single suction Frame mounted Grease lubricated 5287112 (PW) 5286381 (CW)	Handling slurries and pulps which combine corrosive liquid with suspended solids	Heads to 270 feet. Capacities to 10,000 gpm. Temperatures to 250 F.	Available in many materials. Choice of packing or mechanical seal. Easy to disassemble for inspection or repair.

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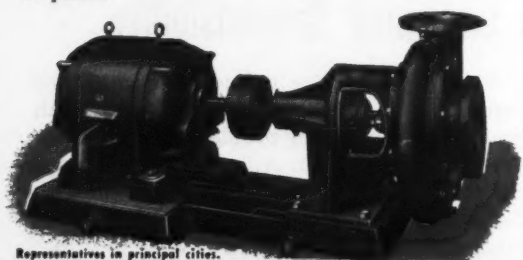
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PIONEERS OF PROGRESS

One of the oldest dreams in the field of medicine was the "elixir of life" alchemists looked for. The same science which drove the "elixir" philosophy into obscurity has now given us ACTH which has a surprising number of the attributes of the mythical elixir. For this we are indebted to F. W. Specht, President of Armour and Company whose research team opened...



F. W. SPECHT

A New Frontier in Medicine

There were puzzled expressions on the faces of Armour scientists one day in 1948. The Armour Laboratories, pharmaceutical division of the meat packing firm, had sent samples of the first pure lot of a new pituitary hormone to Dr. George Thorn of Harvard Medical School. When Dr. Thorn phoned Armour to report his initial results, Armour doctors rushed to Boston on the first plane.

Dr. Thorn had administered ACTH to a group of patients with widely differing maladies. Arthritics were climbing out of their wheelchairs. And rheumatic fever patients showed marked improvement. Half a dozen unrelated diseases appeared to be yielding to the same drug.

At about the same time much confusion resulted when the *New York Times* broke a story of work at the Mayo Clinic with the "wonder drug" cortisone. In many quarters it was quickly, and wrongly, assumed that the two were the same thing. Actually ACTH is the hormone that causes the adrenal cortex to secrete cortisone and other hormones. But the publicity caused an uproar at Armour where a flood of letters, telegrams and phone calls rolled in asking for ACTH. It was unfortunate for the men who had developed it, for the hormone was still being produced in laboratory glassware in milligram quantities — despite the 12 years of work which had already been put into this project.

How did a meat packer become interested in pharmaceuticals? It all started in the 1880's when pepsin became a gaslight wonder drug. Physicians and researchers requested glandular extracts from Armour. Though the materials they wanted

(among them: "brain extract" and "powdered gallstones") changed as vogues in medicine changed, the Pepsin Department never seemed to stop growing.

Since animals slaughtered at Armour had the same basic body mechanisms and controls as human bodies, medical research was able to turn up proven therapeutics. This has been shown with thyroid extract and insulin which are still volume pharmaceuticals.

Dr. Frederic Fenger, who joined Armour in 1907, had much to do with the early work of finding the "what" and "how" of thyroid. He was also active in work dealing with liver, and pituitary extracts. By the 1930's, he and men like him, had brought the question of pituitary action to the fore. But they were hampered by a lack of assay methods and even by a lack of knowledge of what they were working with.

Despite this, in 1936 Victor Conquest, now Vice-president in charge of research, set up a separate pituitary project at Armour. Though a team in this department worked hard for four years, there was little real evidence to show that the project should continue. Nonetheless, in 1942 Conquest brought Dr. F. C. Koch from the University of Chicago to work on the problem.

Koch's idea was to separate pituitary hormones — since it was known that there were many of them. Some progress was made. Then in 1944 the Sayers and Woodbury assay method was announced and with this method of coming to grips with his problem, Koch was able to show some definite results.

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But by this time also the war was playing havoc with research projects. Trained replacements were unavailable and the draft, post-graduate work and other factors reduced the staff considerably.

Actually, up to that time ACTH was just one of about six pituitary hormones which, it was felt, might have some value and then again might be complete duds.

Fortunately, it was only a little later that F. W. Specht became President of Armour and Company. Having based his career on applied business research, he had a kindly feeling for chemical research. He could have terminated this work. It had stretched on for years without showing commercial possibilities. But he had faith that something would come of it.

Conquest's hunch about ACTH being the important hormone from the pituitary was taken up. Dr. Edwin E. Hays joined Koch and others in isolating and purifying it. Shortage of help still dogged the laboratories and Koch had to take over administration of the whole biologicals program. Nonetheless, he and Hays and their associates were able, by 1947, to fill most of a gallon jar with light, fluffy powder: it was the first ACTH pure enough to be used in human tests.

Special features of the Armour Pharmaceutical Center at Kankakee, Illinois (where ACTH is produced) will appear in a future issue of CHEMICAL PROCESSING.

These tests are still going on though the results so far have been enough to win ACTH a place unique in medical treatment. A partial list of the diseases in which it is effective includes rheumatoid arthritis, rheumatic fever, hypersensitivity (severe allergies), contact dermatitis, eye infections, poison ivy, shock, and even snake bite. Behind these far reaching therapeutic powers is the fact that ACTH appears to be the key element of the body's mechanism in correcting any unusual strain placed upon it.

Landslide in the Laboratory

When the news got out and while the blizzard of letters was still howling through Armour's labs, 60 chemists and technicians under Joseph D. Fisher were assigned to improvised quarters. Their job was to produce the hormone as fast and in as great quantity as could be done. At this stage there was plenty of pessimism outside Armour — comparisons of supply and demand indicated that there would never be enough ACTH to go around. According to the figures they could not have produced enough of the material in a whole year to provide one dose for every letter requesting the much larger quantity required for arthritis treatment. Armour was in a spot.

Premature publicity had created a demand for the drug before laboratory and clinical work had ad-

(Continued on page 198)

THERE WILL BE MORE IN '54!

Expanded production facilities at South Point, Ohio, and new facilities at Omaha, Nebraska, will enable Nitrogen Division to offer substantial quantities of Crystal Urea to resin and plastic users during 1954. Larger quantities of U. F. Concentrate-85 will also be available from South Point.

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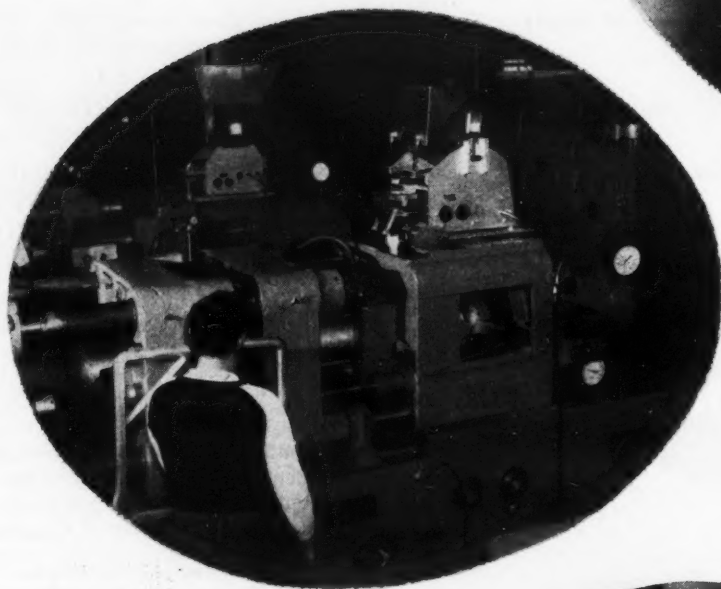
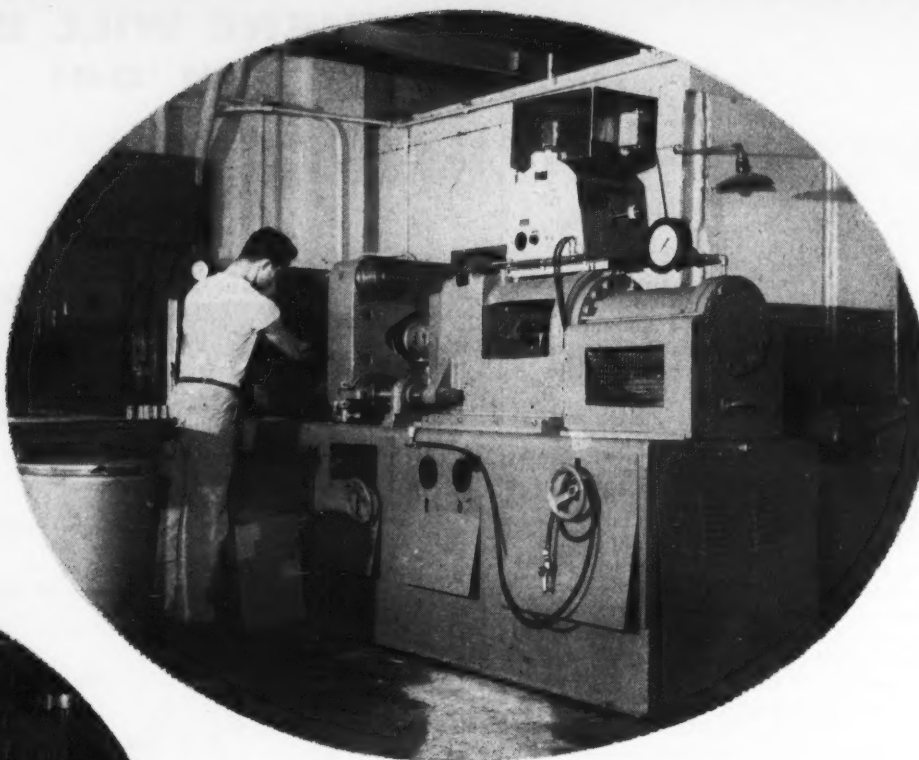
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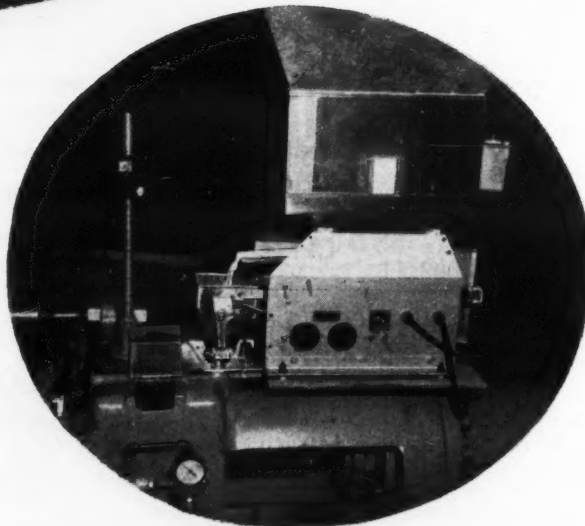
*new solutions
of processing problems*

Net-weight feeder atop molding machine at
Presque Isle Plastics



This picture was taken just as weigh-bucket
on feeder in foreground was dropping
weighed shot into injection chamber

Closeup shows vibratory feeder conveying
material to weigh-bucket



net-weight feeding ups efficiency of injection molding machines

Machines produce more, "no-fills" are eliminated, density is controlled, and less material is used

Problem: As with any progressive concern, Presque Isle Plastics, Inc., Erie, Pa., injection molders of all types of thermoplastics, is continually looking for ways to improve operations and cut production costs. When the company inaugurated an intensive "fault-finding" program six or seven years ago, there were, naturally, many things needing correction.

By mid-1952, most of the more obvious problems had been overcome, and plans were made to improve molding machine efficiency (the number of parts put out by the machine per day). Study indicated that the standard volumetric feeding arrangement was causing most of the trouble because it was not accurate enough. As a result, frequent adjustment of machine and feeder was necessary, during which time the machine was not producing.

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Furthermore, feeders were hard to clean, so that meant more time taken from the production cycle every time colors were switched.

Solution: In the fall of 1952, Presque Isle put in the first net-weigh feeder—now called the Injecto-Weigh. After giving it a trial, the company added seven more feeders within a four-month period, so there are now eight of them on the Watson Stillman molding machines, which range from 12 to 48 oz capacity.

The Injecto-Weigh is made up of four basic elements: a supply hopper, an electrical vibratory feeder, a weigh-bucket mounted on a beam, and an automatically operated gate on the bottom of the bucket.

The vibratory feeder supplies the weigh-bucket with a uniform flow of material. When bucket has received a predetermined weight of the material, beam deflection cuts off current to feeder, thereby halting flow to bucket. At the proper time in molding cycle, weigh-bucket gate opens automatically, and the accurately weighed charge drops into the injection chamber. Entire cycle is synchronized with that of the molding machine.

Results: Machine efficiency has been considerably increased because feeder supplies the correct weight of molding compound at all times. Feeder is easy to clean . . . all parts are exposed when supply hopper is lifted. Unit is readily adapted to different materials.

Other important advantages resulting from actually weighing each shot include: controlled-density parts; elimination of "no-fills;" savings in material. Presque Isle reports up to 5% material savings in large-area jobs, due simply to fact that over-packing of the part has been eliminated. In fact, company personnel feel that weigh-feeding is a necessity in jobs which have a large area for the machine being used.

Just to check control accuracy of the feeder, the company ran 4½ and 7 oz shots on a feeder-equipped 48 oz machine. The results? "Ran just like clockwork!"

(The Injecto-Weigh is manufactured by Gleggarry Processes, Inc., Dept. CP, Bay Shore, N. Y. . . . or for more information check CP 6836 on handy form, pages 2 and 3.)

CAN YOU WRITE . . . ?

There is an opportunity in editorial work for a man who has an engineering or chemical background, some plant experience, a desire to travel and meet people . . . and some writing talent. If you're interested write: The Editor, CHEMICAL PROCESSING, 111 E. Delaware Place, Chicago 11, Ill. State experience and desired salary.

WHICH Apply To *Your* Filtering?

Check 'em off one by one and you may get an idea of what BIRD CENTRIFUGAL FILTERS can do to help you produce a better product and more of it per day at lower cost per ton.

HOT: BIRDS are handling oil from coal hydrogenation at 300°F. They are handling brines at boiling temperature. No "flashing" problems such as you encounter with vacuum filtration.

COLD: An aromatic hydrocarbon is filtered by the BIRD at a temperature of minus 100°F., without encountering insulation problems.

COARSE FEEDS: Coal up to ¾", potash and sodium chloride bearing ores up to ¼" are handled continuously in big volume by BIRDS, with maintenance a few pennies a ton.

FINE FEEDS: Nothing like the BIRD for handling precipitated chrome yellows, barium sulphate and the like, where all particles are minus one-half micron.

BIG TONNAGE: Ton a minute dewatering of fine coal is standard practice with BIRDS. The same goes for many ores and mineral products.

SMALL TONNAGE: A few hundred pounds an hour is accepted practical and highly efficient and economical when BIRDS are handling fine pigments and chemicals.

THICK SLURRIES: Cement slurries at ball mill consistencies are readily and efficiently handled by the BIRD.

THIN SLURRIES: Flocculated materials containing less than five percent suspended solids by weight are put through BIRDS, eliminating bulky, costly thickening equipment.

HEAVY SOLIDS: Take barytes with a specific gravity of 4.3 and some metallic ores that are even heavier. They hold no terrors for the BIRD.

LIGHT SOLIDS: Take synthetic resins with a specific gravity of only 1.1 — BIRDS are virtually standard in this industry.

CHEAP MATERIALS: Like coal, cement, fertilizers — a few dollars a ton. The BIRD handles them at lower cost.

COSTLY MATERIALS: Pharmaceutical and fine chemicals selling for dollars a pound owe much of their quality and purity to intermediate processing by BIRDS.

BIG OPERATIONS: Even the largest chemical and mining operations involving acres of space enjoy the advantages and savings of compact, self-contained, totally enclosed BIRD CENTRIFUGAL FILTRATION and CLASSIFICATION.

SMALL OPERATIONS: In a "packaged" salt refining plant, one small BIRD handles a ton per hour and the total plant occupies only 20 feet by 20 feet of floor space. BIRDS require no vacuum, no filter media, no auxiliary equipment.

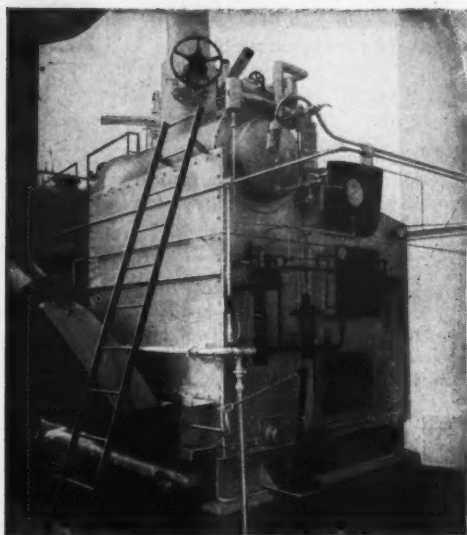
The BIRD RESEARCH AND DEVELOPMENT CENTER is a complete, pilot scale test plant set up and staffed to supply quick, authentic answers on your filtration problems. Why not make use of it?

BIRD MACHINE COMPANY
SOUTH WALPOLE • MASSACHUSETTS

When inquiring check CP 6837 on handy form, pgs. 2-3

FRACTIONAL-DEGREE CONTROL

...at high temperatures, low pressures



SOME OF THE PROCESSES NOW SERVED BY FW DOWTHERM VAPORIZERS

Catalyst Heating and Regeneration	Oil Bodying
Edible Oil Deodorization	Phthalic Anhydride Distillation
Esterification	Synthetic Resin Manufacturing
Fatty Acid Processing	Synthetic Fibre Manufacturing

FOSTER WHEELER Dowtherm Systems

From the largest: 45 million Btu/hr, 700F, 88 psi
To the smallest: 50 thousand Btu/hr, 650F, 53 psi

In FW indirect low-pressure Dowtherm Systems, process companies have found a simple, economical answer to critical heating problems.

By permitting fractional-degree temperature control, even during rapid process fluctuations, FW Dowtherm helps eliminate both ruined batches and reruns due to uneven temperatures. It simplifies processing—and yields worthwhile savings in time, materials and equipment.

Foster Wheeler designed, engineered and constructed the first complete Dowtherm heat process system 20 years ago. Since then, FW units have helped more and more plants improve product quality, and reduce operating costs. *Foster Wheeler Corporation, 165 Broadway, New York 6, N. Y.*

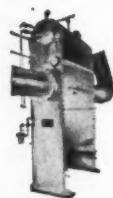
ADVANTAGES

High temperature processing at low pressure
Fractional-degree temperature control
Uniform temperature throughout processing
Low maintenance and repairs
Simplicity of operation

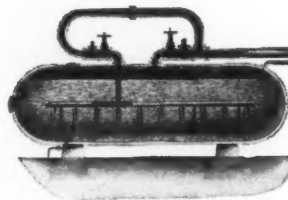
MEETING THE EXACTING NEEDS OF THE PROCESS INDUSTRIES



SULFUR RECOVERY EQUIPMENT
Converts H_2S and CS_2 from waste gases into income-producing gases.



WASTE HEAT BOILERS
Help achieve maximum fuel economy and effective temperature control in chemical, oil, paper, metal and many other industries.



STEAM ACCUMULATORS
Automatically store steam to meet peak demands of process plants. Permit operation of boilers at constant, most economical rate.

FOSTER WHEELER

When inquiring check CP 6838 on handy form, pgs. 2-3

NEW SOLUTIONS of processing problems

Scherer assures rapid production with humidity conditioning unit accurately controlling RH

Problem: At the R. P. Scherer Corp. of Detroit, high speed production of medicinal capsule containers was held up in damp or humid weather. Circulating air blowers, satisfactory on dry days, failed to dry capsule fast or thoroughly enough.



Capsule inspection room where finished capsules are checked carefully before packaging. Along wall at left are doors to drying tunnels, in which conditions are held at 80°F and 25% RH

Solution: Tests pointed up need for conditions of 80°F temp with a moisture content of 35 gr/lb (25% RH). Kathabar System of humidity conditioning was found to be most practical. This system removes moisture from air by a moisture absorption process, with no wasted energy for cooling or heating.

Results: Continuous, full production is now maintained by the use of humidity conditioning equipment which accurately and dependably controls the moisture content of air throughout production area.

With automatic, continuous operation of the system, a large increase in gelatin capsule production has been reported, and similar systems have been installed in other Scherer plants.

(Kathabar humidity conditioning systems are a product of Kathabar Div., Surface Combustion Corp., Dept. CP, Dorr & Thomas St., Toledo 1, Ohio . . . or for more information check CP 6839 on handy form, pages 2 and 3.)

Utilize polyethylene container to eliminate ammonia fumes at paint company . . .

confinement of NH_3 in closed system improves employee morale

Problem: At the Jones-Blair Paint Co., of Dallas, Texas, during the processing of latex paint, aqueous ammonia is added to adjust the pH. Formerly ammonium hydroxide was obtained in carboys and manually transferred to a pail as needed. Although operator wore a gas mask, procedure was still unpleasant, as well as being

somewhat cumbersome and hazardous. In addition, fumes annoyed others in the building.

Solution: A 3¾ gal polyethylene container was acquired and placed in operation in a closed system as shown in accompanying photograph. Ammonium hydroxide is now purchased in drums



Height of ammonia in polyethylene container can be observed during transfer from drum

instead of carboys. When NH_4OH is needed for process, plastic container is connected to drum with rubber tubing and stainless steel tubing in such a manner that fumes are confined. Container is sufficiently transparent so that level of liquid in it can be observed.

When required quantity of NH_4OH has been transferred, valves are closed and container carried to processing vessel. Ammonia is transferred to material in process by a similar closed system in which stainless steel tubing is used.

Results: Ammonia fumes have been completely eliminated with the present system, which has been in operation for eight or nine months. Employee morale has been greatly improved, as well as safety. Plastic container is light and compact, allowing it to be easily carried to points in process where ammonia is needed.

(Polyethylene container is product of American Agile Corp., Dept. CP, 5461 Dunham Rd., Maple Heights, Ohio . . . check CP 6840, pages 2 and 3.)

Describes injection molding of silicone rubbers

Bul defines properties, applications of silicone rubber. Injection molding of products described.

Bulletin may be obtained from Dept. KP, Minnesota Rubber and Gasket Co., Dept. CP, 5724 W. 36th St., Minneapolis 16, Minn. When inquiring specify CP 6841 on handy form, pages 2 and 3.

what materials would you choose

for these

CORROSION PROBLEMS?

1

Intricate casting for special valve must be completely corrosion resistant, even in holes. Weight is about 250 lbs., hence corrosion-resistant metals are too expensive. Chemicals handled are sulphites, bleaches, alums. After reviewing several materials, the valve manufacturer finally settled on . . . well, what would you use?



2

Dished head for evaporator, 5 ft. dia., handles solution containing hydrochloric acid, ammonium chloride, and zinc chloride. Temperature 212 deg. F, under 29 in. vacuum. What would you choose to give needed heat and chemical resistance?



3

Outdoor storage tank for hydrochloric acid holds 12,000 gallons. Built to last for years, it gives manufacturer big savings through bulk purchase of acids. What material would you specify?



1

Valve was cast of gray iron, then covered with an Ace hard rubber compound specifically developed for this application. The most intricate designs can be protected with Ace hard or soft, natural or synthetic rubber.

2

Because of the high temperature, this evaporator head was lined with an Ace synthetic hard rubber compound. Note the wide, straight seams, and the extra protection in corners and around flanges.

3

This storage tank must stand hot sun and freezing cold alike, so it was lined with Ace soft rubber. Inside this same plant, 1000 ft. of hard rubber lined steel pipe and two tanks lined with hard rubber are also at work.

↑

WITH HUNDREDS of rubber and plastic compounds to choose from, we can usually supply the one best answer to any corrosion problem, with equipment ranging from pumps, tanks, piping, valves and utensils to special molded or fabricated parts.



ACE® rubber and plastic products

AMERICAN HARD RUBBER COMPANY
93 WORTH STREET • NEW YORK 13, N. Y.

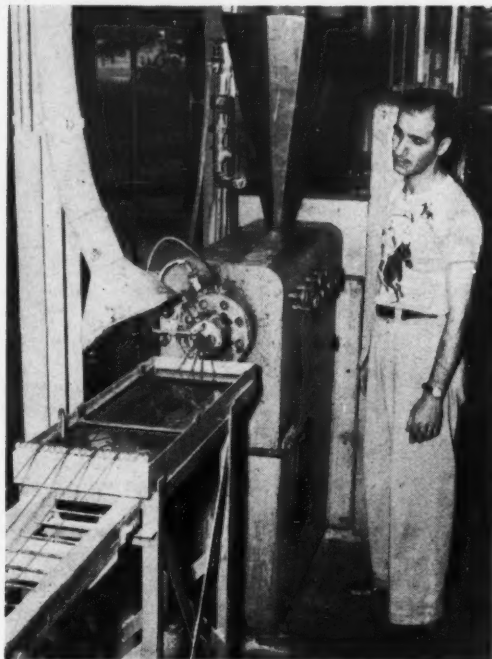
When inquiring check CP 6842 on handy form, pgs. 2-3

NEW SOLUTIONS of processing problems

Small samples of cellulose acetate are economically extruded on single stage unit . . .

machine compounds variety of formulations and flow hardnesses at Hercules

Problem: In the Plastics Laboratory at the Parlin, N. J. plant of Hercules Powder Co., it is necessary to prepare a large number of small samples of cellulose acetate and ethyl cellulose molding powder for experimental purposes. A means of compounding these materials was required that would not involve excessive sample loss.



Only a small amount of sample is lost with single stage extruder shown at Parlin Plant of Hercules

Solution: Approximately four years ago, a MPM Extruder was acquired and placed in operation. This single stage, electrically heated unit has a 2½" diameter screw. It incorporates 11 separate radial cooling zones on the cylinder for removal of frictional heat. Machine is supplied with six pyrometer instruments for the control of the cylinder and die temperature.

Results: Since extruder is a straight displacement device, the material that is placed in the hopper comes out the dies. Only a very small amount of sample is lost in changing from one sample to the next. Another advantage of unit is that a large variety of formulations and flow hardnesses can be handled. It has been found to do a satisfactory job of compounding cellulose acetate and ethyl cellulose. It is necessary to pre-dry the material before it enters the extruder.

(Model No. 250 MPM Extruder is product of Modern Plastic Machinery Corp., Dept. CP, 15 Union St., Lodi, N. J. . . or check CP 6843 on pgs. 2 & 3.)



CATIONIC PROPERTIES OF ARMEENS®, DUOMEENS®, ARMACS®, ARQUADS®, ETHOMEENS® CONTRIBUTE HEAVILY TO INDUSTRY

By Dr. M. R. McCorkle, Technical Director,
Armour Chemical Division

Fatty amines, such as those listed in the headline above by their Armour trade marks, are a group of compounds derived from fatty acids, and all cationic in nature. They consist of a long hydrocarbon chain and a hydrophilic group. Due to their cationic properties they are finding applications as surface active agents in many industries, such as petroleum, textiles, rubber, and mineral beneficiation.

FROTH FLOTATION

The froth flotation method of mineral separation and beneficiation depends upon the selective flotation of the desired mineral by air bubbles, separating the mineral from other minerals with which it was associated in the earth. This flotation process can be made more efficient by surface active agents. Some of the Armour cationic chemicals, which are strongly adsorbed upon minerals which possess a high concentration of negative surface charges such as silica or the silicates, are extremely efficient and economical flotation agents. Only two ounces of an Armac—an Armour fatty amine acetate—are sufficient to separate and float the concentrated mineral from one ton of ore, after the ore has been crushed to beneficiation size and mixed with four tons of water. Other froth flotation separations with Armour chemicals have proved equally spectacular.

ASPHALT BONDING

Another commercial use for these versatile chemicals involves asphalt pavement application, whether new or repair. The addition of a small amount of Duomeen T to asphalt before paving improves the binding of the asphalt to the aggregate. The Duomeen, an Armour fatty diamine, is effective even on wet aggregate! It plates out as a thin, tenacious film at the interface between the asphalt and the aggregate, preventing the entrance or passage of water, and actually forcing water from the interface. Thus, with the addition of Duomeen T to the mix, road laying or resurfacing can be done even in the rain!

© ARMOUR AND COMPANY



BACTERICIDAL ACTIVITY

The high bactericidal activity of quaternary ammonium compounds has been widely studied and used in recent years. Arquad T, an Armour quaternary ammonium chloride compound, is one of the better bacteriostats available for water treatment, and its function is very similar to the action of Duomeen T as an asphalt additive. The Arquad is adsorbed on the surface of the bacteria, and builds up a thin film. This film prevents the exchange of vital gases, necessary to the metabolism of the organism, between the bacteria and the liquid in which it is found. Thus the bacteria is actually starved to a point of destruction.

APPLICATIONS ON METALLIC SURFACES

Surface active cations, such as these Armour chemicals, are adsorbed onto metallic surfaces, which acquire a water-repellent, organophilic character. This is particularly important in dealing with oil coatings. For instance, ferrous surfaces treated with rust preventative oils containing Armour's cationic agents not only are more readily and thoroughly coated with the oils but acquire corrosion-resistant properties.

As little as one per cent of tallow or soya amine (Armeen T and Armeen S) added to a slushing oil will give ferrous surfaces increased protection against both excessive moisture and salt spray conditions.

Cationic agents of this type may also be employed as emulsifying agents in white mineral oil concentrates. For example, a steel strip dipped in a 2% emulsion of #35 white mineral oil emulsified with Arquad 2C and Ethomeen S/12 picked up an oil coating. Test data indicated that this coating gave good protection against acid corrosion. The strip was still non-water-wettable after this test.

Armour's extensive line of cationic corrosion inhibitors offers the manufacturer or compounder a large selection for specific applications. Each corrosion problem requires separate consideration and the inhibitors are singular in that they contain

certain known percentages of compounds containing known hydrocarbon chain lengths. Also, Armour offers a stepwise series of compounds from C-8 to C-18 containing many different polar groups possessing any degree of surface activity.

CLAYS

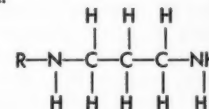
By means of cationics, it is possible to make clays such as bentonite acquire an organophilic character. The resulting ability to repel water may be used to retard the swelling of clays in oil-producing formations. This includes injection wells for water flood operations as well as primary producing wells.

TECHNICAL BOOKLETS

Complete information on these Armour Chemicals is contained in our booklets and technical bulletins. New applications are explained, complete specifications are given, and guides for ordering samples are presented. Send the coupon with your letterhead for more information on these versatile Armour Chemicals.

AMINE DERIVATIVES NOW IN COMMERCIAL PRODUCTION

Work with derivatives of these primary and secondary amines has led to the commercial production of new Armour products, the Duomeens. These diamines undergo similar reactions to those of primary and secondary amines. They have the following chemical structure, wherein the normal alkyl group "R" varies in chain length from C12 to C18. The C16 and C18 chains can be produced with a fully saturated chain or degrees of unsaturation.



These diamines are soluble in a wide variety of organic solvents including alcohols, ethers, ketones, chlorinated solvents, and aliphatic and aromatic hydrocarbons. They are not soluble in water but certain members show a slight dispersibility in water at higher temperatures.

Indicated applications are as corrosion inhibitors, chemical intermediates, bactericidal agents, pigment grinding and dispersant aids and in asphalt bonding.

Send the coupon with your letterhead for samples and literature of these materials: Duomeen C (from coco fatty acids), Duomeen 12 (from lauric acid), Duomeen S (from soya fatty acids), Duomeen T (from tallow fatty acids).

ARMOUR CHEMICAL DIVISION

ARMOUR AND COMPANY • 1300 WEST 31ST STREET • CHICAGO 3, ILL.

CHEMICAL PROCESSING

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Neo-Fat 280
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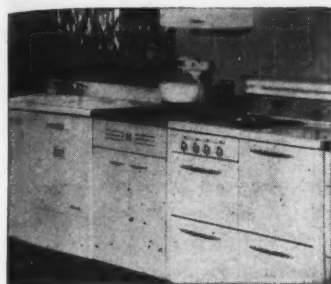
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NEW LOW-COST NEO-FAT® PROVIDES HIGH QUALITY HIGH-BAKE ALKYD FINISHES



Neo-Fat 280 is a new low cost material for the production of high-bake alkyd finishes. It parallels the performance of present fatty acids at much lower cost, providing many of the same advantages as our high purity lauric. It offers the same freedom from unsaturated fatty acids, for example -with less than 1% unsaturated content, maximum. It meets all the requirements to give tough, flexible finishes of superior quality.

When properly formulated, applied and baked, Neo-Fat 280 provides excellent non-yellowing properties. Urea or melamine resin-modified alkyds made with Neo-Fat 280 are stable to both heat and light. This Neo-Fat guarantees whites that stay white regardless of age or atmospheric conditions.

The unusual properties of urea or melamine resins combine with and support the properties of Neo-Fat 280 alkyds to provide permanently tough and flexible finishes that will not check or embrittle on aging. Alkyds made with this material have clear, strong, hard films with outstanding resistance to greases, oil, conventional soaps, solvents and other similar chemicals. These properties mean superior enamels for use in the protection of appliances such as refrigerators, stoves, cabinets, etc.

Specifications for Neo-Fat 280 include a titer of 31 to 36°C.; iodine value of 1 max.; acid value of 275 to 281; unsaponifiable content 0.2% max.; color, Lov. 5¼", 1R/10Y max.; or Gardner, 1933 standards, 1 max. The fatty acid composition averages 56% myristic, 37% capric, 4% lauric, 2% palmitic and 1% caprylic.

Neo-Fat 280 is available in 55-gallon drums and in aluminum tankcars. Send the coupon for a free sample.

BUILD NEW PRODUCTS WITH PURE CAPRYLIC AND CAPRIC ACIDS

The availability of Armour's high purity caprylic (Neo-Fat 8) and capric (Neo-Fat 10) acids should interest many processors working on new product development, particularly that involving organic synthesis.

These two coco fractions are available with purity of 92% or above. The average composition of Neo-Fat 8 is 93% caprylic, 4% capric, and 3% caproic. Neo-Fat 10 averages 92% capric, 5% lauric and 3% caprylic acids.

SPECIFICATIONS

Neo-Fat 8: titer, 16°C. max.; iodine value 1 max.; acid value of 387 to 392; moisture and unsaponifiable content both 0.2%; and color, Lovibond 5¼", 2R to 20Y max.

Neo-Fat 10: titer, 28 to 33; iodine value 1 max.; acid value of 323 to 329; moisture and unsaponifiable content both 0.2%; and color, Lovibond 5¼", 2R to 20Y max.

SOLUBILITY AND COMPATIBILITY

Both Neo-Fat 8 and 10 are soluble in the following (Neo-Fat 8 in all proportions): acetone, amyl acetate, benzol, butanol, carbon tetrachloride, dipentene, ethanol 95% and 100%, ethyl ether, ethylene glycol, kerosene, methyl cellosolve, turpentine, V.M.&P. naphtha, and xylol.

Both are compatible (at 60°C.) with the following: asphalt, beeswax, carnauba wax, ester gum, gum resin, linseed oil, paraffin wax, petroleum sale oil and soybean oil.

NEO-FAT 8 USES

Due to its exceptionally high purity, Neo-Fat 8 is an excellent raw material for producing derivatives of caprylic acid, such as alcohols, aldehydes, ketones, es-

ters, metallic salts, nitriles, amides, amines, and other such products. The pure acid or its derivatives find use in the manufacture of essences, synthetic perfumes, flavors, artificial leather, among other applications. It is also used in anti-foaming agents, dye-stuffs, pharmaceuticals, and as a manufacturing intermediate in many synthetic organic compounds.

Esters of caprylic acids with diethylene, triethylene and propylene glycols are suitable plasticizers for ethyl and nitrocellulose, polyvinyl acetate, etc. Triethylene glycol dicaprylate is used with other plasticizers in vinyl-vinylidene copolymers to act as an extrusion aid. Neo-Fat 8 may also be used as a high boiling solvent for plastics, varnishes, gums, etc.

NEO-FAT 10 USES

Neo-Fat 10 is an excellent raw material for producing alcohols, aldehydes, ketones, esters, metallic salts, nitriles, amides, amines and other derivatives of capric acid which find many varied uses in the chemical industry and in many other fields.

In an insecticide formulation, the addition of 1-1200 Neo-Fat 10 killed more than 99% of the green apple aphid. In another field, 0.1-1% capric to myristic in polysiloxane lubricants gives low-boundary friction co-efficients. In other applications, capric acid finds use in the manufacture of essences, synthetic perfumes, flavors, disinfectants, anti-foaming agents, dye-stuffs, pharmaceuticals, high boiling solvents for paints, varnishes, plastics, gums, etc., and as a manufacturing intermediate in many synthetic organic compounds. Send the coupon for samples of these two versatile chemicals.

ARMOX LPO PROVIDES LOW STEARINE CONTENT IN ACIDLESS TALLOW OIL

An economical low pour oil for use in producing steam cylinder and other lubricants, Armox LPO overcomes a major difficulty of other raw materials—sedimentation. When products are compounded with regular Acidless Tallow Oil, cold weather causes crystallization of stearines normally present in the raw materials, leading to sedimentation. Armox LPO is the result of requests by industry for a low stearine content low pour oil. Over the past year it has been tried and adopted by these customers. Specifications are:

	MIN.	MAX.
F. F. A. (as oleic).....	—	0.5%
Cloud point, °F.....	—	70
Pour point, °F.....	—	65
Flash point, °F.....	585	—
Saponification No.....	190	200
Iodine No.....	70	80
Titer, °C.....	—	37.5
Color, N.P.A.....	—	2
Sp. Gr. 60°/60°F.....	0.910	0.920

Armox LPO is available in drum and tankcar quantities for prompt shipment. Send the coupon for free samples.

Mail this coupon with your letterhead

Armour Chemical Division, c/o 1225 West 51st Street, A. Chicago 20, Illinois

Send literature: ☐ Armeens ☐ Duomeens ☐ Arquads ☐ Ethomeens ☐ Armour
Send samples: ☐ Neo-Fat 280 and Tech. Bull. ☐ Duomeen C ☐ Chemicals
☐ Neo-Fat 8 and Lit. ☐ Duomeen 12 ☐ Duomeen 5
☐ Neo-Fat 10 and Lit. ☐ Armox LPO ☐ Duomeen T

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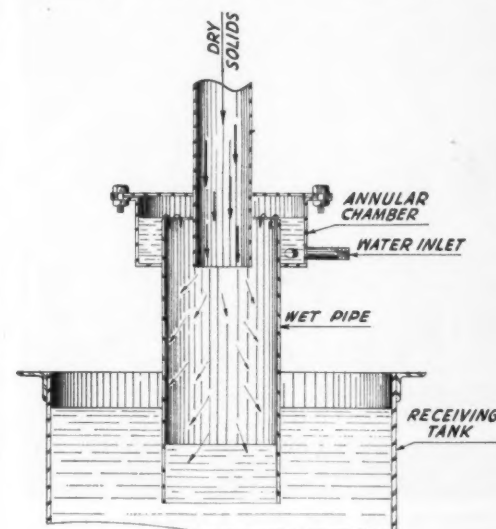
NEW SOLUTIONS of processing problems

Prevents plugging of pipe discharging calcine from fluid-bed roaster . . .

"gentle-flow" water quench eliminates possibility of water spray working up into pipe

Problem: Pipe discharging hot calcine from FluoSolids roaster plugged periodically because of water-quenching method being used. Calcine fell into quench tanks through a water spray, and as some of this spray entered discharge pipe interior, it caused a damp plug to form. When this happened, operator had to hammer the pipe — a time-consuming operation that was hard on the pipe.

Solution: Problem was overcome by an assembly of three concentric pipes, as shown in sketch. Quenching water enters tangentially the annular



New calcine quenching system

chamber formed between the largest and next-to-largest pipes, so that it flows with a gentle, swirling action — like that in a dentist's rinse bowl. The outside pipe ends and is sealed off just below the water inlet.

Water overflows the top of the middle pipe, and runs down its interior which extends below slurry level in the tank. Hot calcine from the FluoSolids system drops down the smallest of the pipes either directly into the slurry below or into inner surface of second pipe from which point it is washed into receiving tank.

Results: Gentle flow of water over top of second pipe has eliminated splashing and kept inside of solids discharge pipe dry, thus preventing plugging. Method has saved operator much time and has eliminated the possibility of damage to the discharge pipe.

(FluoSolids system is a development of The Dorr Company, Department CP, Barry Place, Stamford, Connecticut.)

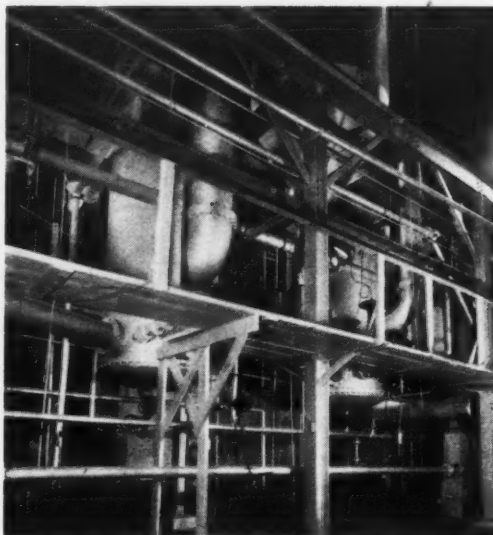
When inquiring check CP 6844 on handy form, pgs. 2-3

Buflovak EVAPORATORS

Profitably Serve Many Industries
with
Dependable, Low-Cost
Evaporation

Profit-building benefits enjoyed by users
of BUFLOVAK Evaporators:

- Efficient evaporation
- Highest rate of evaporation
- Maximum recovery of solids
- Simplified and economical operation



BUFLOVAK Triple Effect, V. R. C. Evaporator. Used for concentrating fish water to 35% from a solution containing 2% solids.

BUFLOVAK Evaporators are built in many types to suit all operating requirements. The various types include Long Tube Vertical Rapid Concentration, Forced Circulation, Low-Temperature Downflow, and Thermo Recompression Evaporators, in Single and Multiple Effects.

A complete 72-page book on BUFLOVAK Evaporators has proved helpful to many. A request on your company letterhead will bring a copy free.

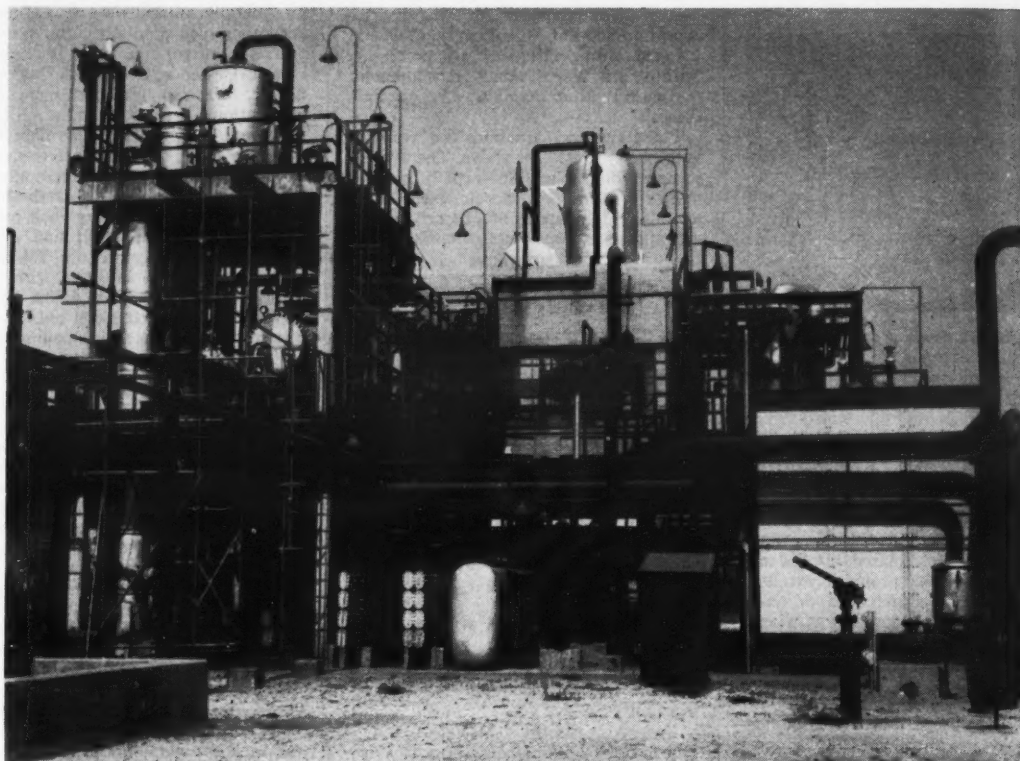
BLAW-KNOX COMPANY

BUFLOVAK EQUIPMENT DIVISION

1645 Fillmore Ave.

Buffalo 11, N.Y.

*new solutions
of processing problems*



View of Armour's solvent crystallization plant shows stripping and solvent recovery equipment at left, and building in center background which houses filter, control board, and refrigeration system. White housing at right is feed end of chillers. Permanently mounted fire nozzles similar to the one in front of the chillers are located throughout the McCook plant

Here's How

Armour separates fatty acids by crystallization from acetone

Process separates out relatively pure saturated acids, having low iodine value, in one step

Controlled crystallization from acetone is used for separating saturated and unsaturated fatty acids at the McCook, Illinois, plant of Armour and Company's Chemical Division. The process is one developed jointly by Armour and The Texas Company, and has been employed at McCook since the spring of 1950 when the plant was completed and operations began.

Almost any kind of mixed fatty acid feed can be

handled, but Armour concentrates mainly on those obtained by splitting tallow and animal grease. (For articles on the Armour splitting operation, see *CHEMICAL PROCESSING*, October 1951, page 58, and March 1953, page 8.) With such materials as feed, products from the solvent crystallization are red oil (oleic acid) and a mixture of stearic and palmitic acids. Advantages of using acetone are:

The crystallization of fatty acids in acetone solution according to the degree of saturation permits the separation of relatively pure saturated acids with low iodine values in a single step. Unsaturated acids having a titer of 0° to 5°C are obtained simultaneously. The unsaturated liquid fraction may subsequently be separated — for example, into an oleic solid fraction and a linoleic-linolenic liquid fraction.

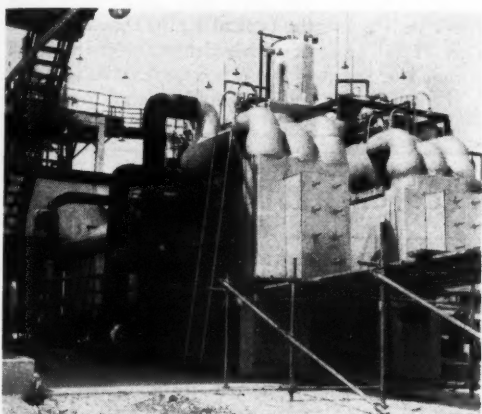
About 4000 lb/hr of distilled fatty acids are sent to the crystallization step. The acetone is introduced into the pipeline, and the mixture is passed through a series of tubular heat exchangers for pre-cooling by water. Then the cooled mixture is pumped through series-connected double pipe chillers in which spring-mounted scrapers operate continuously.

An annular space between pipes in the chillers contains ammonia as the refrigerant to chill the charge mixture to the temperature necessary to accomplish the desired separation of fatty acid fractions. This temperature normally varies between -18° and -45°C , depending upon the crystallization characteristics of the materials to be separated. The lower temperatures are used to permit splitting between two unsaturated acids, such as oleic and linoleic.

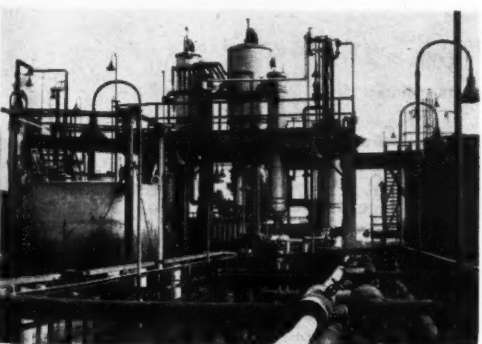
Following the chillers is an enclosed and insulated Goslin-Birmingham rotary vacuum filter in which the crystallized saturated acids are removed from the still liquid red oil. Cake is washed by an acetone spray.

The filter is maintained under a slight pressure of nitrogen (2 to 4" water), as are the acetone storage tanks. This nitrogen is supplied from the plant's inert gas generating system which includes scrubbing to remove the carbon dioxide formed when burning

(Continued on next page)



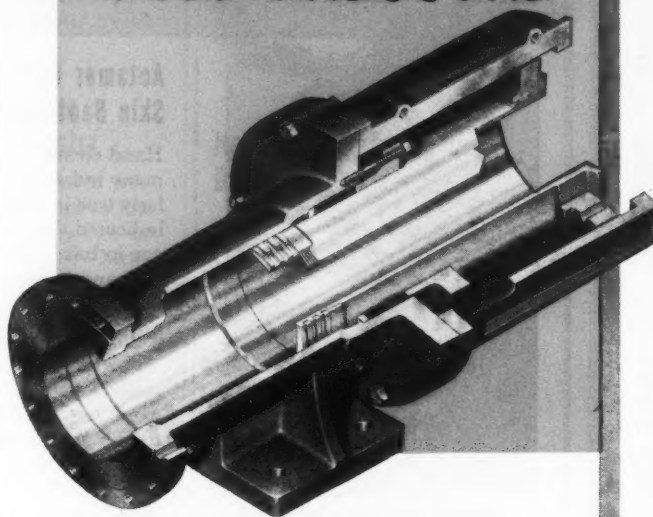
Saturated fatty acids crystallize out in these refrigerated chillers



Another view of the solvent recovery and product-stripping equipment shows floating-roof gas holder for nitrogen in left foreground

ADSCO EXPANSION JOINTS...

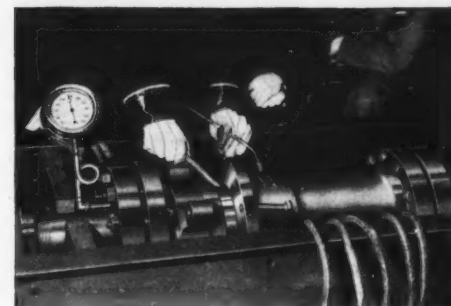
UNPACKED AT FULL PRESSURE



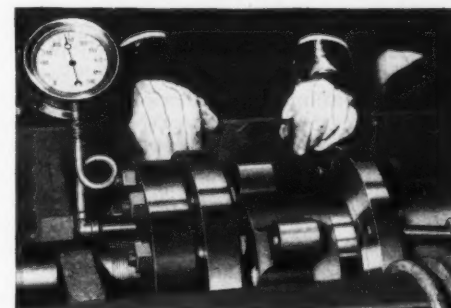
► ADSCO piston-ring expansion joints can be serviced . . . in fact, unpacked and repacked . . . under full line pressure. There is no interruption of service, no down-time for repacking, because the job is done under normal working conditions.

► Yet this isn't the only great feature of this high-quality joint. Slip is completely guided . . . split external guide permits smaller manholes . . . limit stops prevent over-travel of slip . . . polished surface cannot be scored because slip is in contact with packing only . . . misalignment is prevented by both internal and external guiding. ADSCO piston-ring expansion joints are available in a full range of sizes, with 4", 8", or 12" traverse per slip, for pressures to 400 psi and greater and for temperatures to 800F and higher. Call an ADSCO representative or write for Bulletin 35-15H.

... and here's proof



Last strand of packing being withdrawn from stuffing box.



Close-up photograph shows all packing removed. With steam at 240 lbs. pressure and with 300° superheat there is no trace of steam in the empty stuffing box.

With periodic adjustments of the gland, it may never be necessary to repack the stuffing box in an ADSCO piston-ring expansion joint. However, lack of maintenance may make it necessary at some time to do so and the job is easy with this ADSCO joint. The piston rings hold the line pressure during the unpacking and repacking operation. With the vent valve open, the vent chamber is at atmospheric pressure and, under this condition, no steam can enter the stuffing box space. Thus complete repacking can be done under full line pressure.

Adsko
ENGINEERED
PRODUCTS

EXPANSION JOINTS
HEAT EXCHANGERS
STEAM TRAPS
STRAINERS
SEPARATORS
METERS

AMERICAN DISTRICT STEAM COMPANY, INC.

GENERAL OFFICES

NORTH TONAWANDA, NEW YORK

PLANTS: NORTH TONAWANDA, N. Y., AND RICHMOND, CALIF.

When inquiring check CP 6846 on handy form, pgs. 2-3

(Continued from preceding page)

natural gas in the generator. The nitrogen supply is kept in a floating-roof gas holder.

The filter, incorporating developments of The Texas Company, is rather unique. Its peripheral surface is divided into sections running the full length of the filter. Under each section is a shallow pan which receives the filtrate or wash from that section. Outlets from these pans are piped (inside the filter drum) to a rotary valve arrangement which determines the filtration, washing, and blowing cycle. This type of arrangement provides a high degree of flexibility of operation, and permits segregation of the wash and filtrate or certain sections thereof.

Filtrate and wash are combined and the acetone is removed by distillation followed by steam-stripping of the products. Cake is melted by steam coils, and the acetone removed by distillation and stripping in the same manner. Products are pumped to storage tanks for sale.

The acetone recovered from the end products by distillation and steam stripping is ready for reuse after water has been removed.

(Process is licensed by Texaco Development Corporation, 135 E. 42nd Street, New York 17, N. Y. . . or for more information check CP 6847 on handy form, pages 2 and 3.)

Motor burn-outs eliminated on two machines by use of hydraulic drives

New York pigment manufacturer also finds that production equipment operates more smoothly

Problem: At J. S. & W. R. Eakins Company, Brooklyn, N. Y., frequent motor burn-outs and rough operation were experienced on a dust-removal machine and on agitator equipment. These units are used in production of organic and inorganic pigments, which are used for wallpaper, paints, and printing inks.

Dust-removal machine consists of a sheet-metal cabinet with an aluminum ring surrounding a canvas bag. Air holes on inner side of ring blow

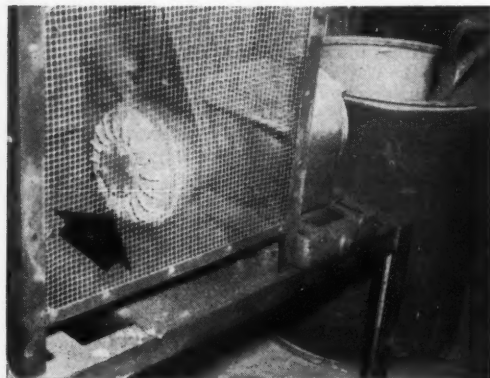


Fig 1—Arrow indicates hydraulic drive which has eliminated shock-loads on dust-removal equipment

for your information...

brief summaries of helpful product news



Photo and data courtesy Associated Sales & Supply Co.

Chloro-IPC Kills Weeds, Saves Growers' Money

Weed-free condition of the field shown in the photograph is the result of using Monsanto Chloro-IPC.

Applied to a field of seventy-day, second-crop green onions at the rate of two pounds per acre, Chloro-IPC saved users approximately \$75 per acre as compared with hand weeding.

Results like these are helping to rapidly increase the market for Chloro-IPC. This selective herbicide can be applied in a wide variety of soils and climatic conditions to control weeds. It has already proved its worth in cotton and soybean fields, in spinach and other vegetable crops.

Chloro-IPC gets effective results by acting through the soil to kill germinating weed seeds. It can be made as a wettable powder or emulsifiable concentrate and is easy to apply by ground spraying equipment. For more information mail the coupon today.

Actamer Cuts Resident Skin Bacteria Up to 97%

Hand cleanliness is important in many industries. This is particularly true in bakeries. It has been indicated that much of the spoilage in bakery products is caused by hand-borne rather than air-borne microorganisms.

Actamer,* Monsanto's bacteriostat, is ideal for use in hand soaps to reduce resident skin flora. Because Actamer clings stubbornly to the skin, repeated use keeps hands virtually germ-free long after washing and reduces resident skin bacteria up to 97%. For more information mail the coupon.



Monsanto Cyclohexylamine Economical Organic Base

Need a strong organic base which is economical to use? Try Monsanto cyclohexylamine. This clear, nearly colorless liquid has a pH value of 10.5 in an aqueous solution of 100 ppm. It also forms salts with all acids including long-chain fatty acids.

Cyclohexylamine has an extremely high affinity for carbon dioxide and rapidly absorbs it from the air. This compound is also very reactive because of its nitrogen component. It is a strong, economical organic base and, in general, enters into all of the typical amine reactions. One or both hydrogen atoms attached to the nitrogen may be replaced by various functional groups.



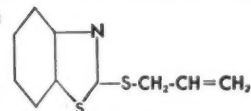
Research Chemist's Corner

WHAT CAN THESE COMPOUNDS DO FOR YOU?

2-(ALLYLTHIO)BENZOTHAZOLE

Synonym:
2-(Allylmercapto)Benzothiazole

Formula:

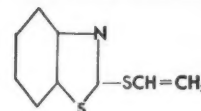


Approximate Properties:

Mol. Wt.	207
Appearance and Color:	Amber-colored oil
Assay:	
Odor:	Mild Mercaptan
Solubility:	Very soluble in acetone, ether, alcohol, ethyl acetate, benzene, heptane and chloroform.
Stability:	Stable
Brief statement of chemical properties:	Reactive olefinic double bond, slightly basic nitrogen atom.
Melting Point:	-2° C.

2-(VINYLTHIO)BENZOTHAZOLE

Synonym:
Vinyl Mercaptobenzothiazole



193
Orange liquid
95—98%
Mild Mercaptan
Soluble in benzene, ethanol, ether; insoluble in water.
Polymerizes
Reactive olefinic double bond, slightly basic nitrogen atom.
Boiling Point: 107—109° at 0.2—0.3 mm.

Cyclohexylamine
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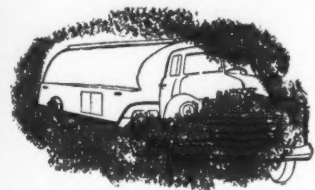
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Cyclohexylamine is used as a dye-stuff intermediate, petroleum additive, component in boiler water treatment, corrosion inhibitor, and in organic syntheses. To get a technical bulletin on this compound, mail the coupon.



New Monsanto Tank Truck

Faster service for Monsanto benzyl chloride customers in on the way, thanks to a new nickel tank truck to deliver shipments.

The new truck will also simplify handling problems. Unloading is accomplished by nitrogen pressure—customers need only hook up an unloading line as no pump is required.



Facts on the Flow of Slurries For the Cement Industry

Reprints of a new article entitled "Facts for the Cement Industry on Flow of Slurries" are available from Monsanto.

Recently published in the trade press, this article by Dr. John R. Van Wazer gives a thorough and detailed discussion of all the key factors involved in the flow of cement slurries.

Dr. Van Wazer, in the first part of his paper, briefly reviews the basic facts about the different classifications of materials which flow: normal or Newtonian fluids, plastic or Bingham fluids, pseudoplastic fluids, and dilatant fluids. Several consistency curves are given for these kind of fluids.

Following this review, Dr. Van Wazer describes the flow of cement slurries and gives an explanation of the mechanism of deflocculation. He concludes that the addition of a deflocculant, such as sodium tripolyphosphate, to a raw cement slurry has several important results. The water content of the slurry can be considerably reduced, milling improved, and the character of flow changed from the plastic to the dilatant type.

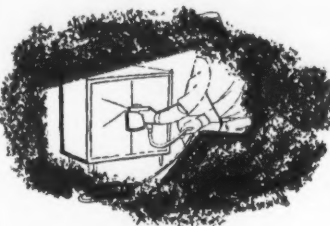
Single-Source Buying For Detergent Industry

Both anionic and nonionic wetting agents and a complete line of detergent phosphates can be obtained from one source—Monsanto. Anionic Santomeres*, nonionic Steroxes* and phosphates, all come from the world's largest producer.

"One-stop" ordering of these products can give you faster service and greater economies.

Moreover, you can depend on the outstanding performance of these compounds. Sterox AJ, for example, has many important advantages. It possesses a faint, pleasing odor. It is chemically inert, stable and active over a wide range of conditions. This unusual stability coupled with superior surface-active properties makes Sterox AJ valuable in numerous applications.

Uses include laundering, paper rewetting, industrial cleaning compounds, detergent sanitizers and textile processing. Write for bulletin P-147.



New Flattening Agent Developed by Monsanto

There's a superior Santocel* now . . . Santocel Fifty-Four.

The new product is a greatly improved flattening agent for lacquer manufacturers. Developed by Monsanto research, Santocel Fifty-Four has these important advantages over other flattening materials:

- Settles much less in the vehicle
- Requires little or no grinding
- Does not reduce flattening efficiency if overground
- Disaggregates more readily
- Provides smoother films.

Write for more information today.



*Reg. U. S. Pat. Off.

MONSANTO CHEMICAL COMPANY 3/54
1702 South Second Street, St. Louis 4, Missouri

Please send information on:

- ☐ Santocel Fifty-Four ☐ 2- (Vinylthio)Benzothiazole
- ☐ 2- (Allylthio)Benzothiazole

Please send:

- ☐ Reprint of "Flow of Slurries" article ☐ Cyclohexylamine technical bulletin
- ☐ Sterox AJ Bulletin P-147 ☐ 2- (Allylthio)Benzothiazole sample
- ☐ Chloro-IPC data sheet ☐ 2- (Vinylthio)Benzothiazole sample
- ☐ Actamer technical bulletin

Name.....Title.....
Company.....
Street.....
City.....Zone.....State.....

NEW SOLUTIONS of processing problems

dust out of pigment as ring moves up and down, reversing its action every 12 seconds. With mechanical drive, action was sudden, harsh, and jerky. Motor used was a 1.5 hp, 1730 rpm specially-wound, high torque AC model. This motor was continually being damaged by shock loading and burned out every few months.

Agitator in precipitation tank is powered by 7.5 hp motor, operating at 1750 rpm on 220 v AC. Motor, which works through a speed reducer, starts under a heavy load caused by the high viscosity of the pigment. With straight mechanical drive, current consumption was high and motor burned out periodically.

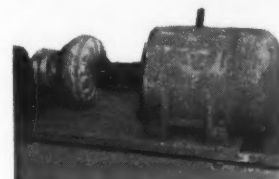


Fig 2—Hydraulic drive and motor used for operation of agitator at pigment plant

Solution: Approximately two years ago, the 7.4 Hydro-Sheave drive shown in Fig 1 was installed on the dust-removal equipment. Since it was soon evident that the high

torque motor was no longer needed, it was replaced with a squirrel cage normal torque motor.

At the same time, the 9.5 hydraulic drive shown in Fig 2 was acquired and placed in operation on the agitator equipment.

Results: Normal torque motor presently being used on the dust-removal equipment has been operating satisfactorily nine hours a day for more than two years. Motor burn-outs have been completely eliminated. Improvement in performance was made possible by the hydraulic drive absorbing the shock-loading effect of the driven equipment. According to the pigment manufacturer, dust-removal machine also now has a markedly smooth, soft action as it completes each cycle.

Motor used in conjunction with the agitator equipment has also operated trouble-free since hydraulic drive was installed, shock of overloading having been eliminated.

(Hydro-Sheave Drives are product of Hydraulic Div., Twin Disc Clutch Co., Dept. CP, Rockford, Ill. . . or for more information check CP 6849 on handy Reader Service slip located between pages two and three.)

Business and technical problems tackled by computing center

Electronic computing facilities available to help solve problems of business and industry are described in 6-page booklet. Analog and digital computing equipment is shown, with photos of the equipment in use.

"Computer Center" is available from Computer Center, Armour Research Foundation of Illinois Institute of Technology, Department CP, Technology Center, 35 West 33rd Street, Chicago 16, Illinois.

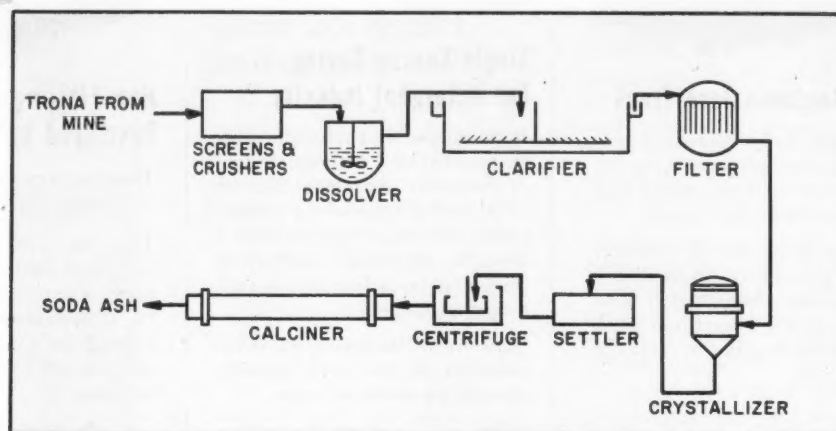
When inquiring check CP 6848 on handy form, pgs. 2-3



materials

Fig 1—General view of soda ash plant

Fig 2—Operations involved in producing soda ash from trona



organic impurities in trona removed by activated carbon

foaming problem and end-product discoloration are eliminated in soda ash plant

Problem: Intermountain Chemical Company's huge Green River, Wyoming, deposits of trona, from which soda ash is made, contain organic and other impurities which do not permit refining by simple calcination. Impurities cause excessive foaming in crystallizers and evaporators, and discolor the end-product.

Trona is a relatively rare, non-metallic mineral, composed of hydrous sodium carbonate and sodium bicarbonate ($\text{Na}_2\text{CO}_3 \cdot \text{NaHCO}_3 \cdot 2\text{H}_2\text{O}$). Pure trona contains 70.39% sodium carbonate and yields natural soda ash when calcined to drive off the excess CO_2 and water.

The Green River deposits include almost 30 square miles and contain an estimated 10 million tons of trona per square mile. This is enough to produce 170 million tons of pure soda ash — enough to

supply the entire needs of US industry for the next 35 years.

Solution: Because activated carbon possesses the property of adsorbing impurities causing color, odor, and haze, the company decided to try it as its weapon.

There is no chemical reaction involved in the adsorption. Activated carbon may be visualized as a "solid foam". It is made so that it has a large surface area per unit volume. This is important since adsorption is essentially a surface phenomenon.

After the preliminary pilot plant work was completed, a full-scale production unit, having an annual capacity of 300,000 tons of soda ash, was placed into operation. The plant is operated by Westvaco Chemical Division, Food Machinery and Chemical Corporation, for the Intermountain Chemical Company.

Trona is screened, crushed, and sent to a dissolver. From here, the solution goes to a clarifier, where insoluble shale (about ten per cent of original weight) is removed. Overflow from clarifier is treated with Darco activated carbon and filtered. Sweetland filters are used in this operation, and are precoated with diatomaceous earths. Approxi-

mately six and one-half lb of Darco are used for every ton of soda ash produced. The filtering operation normally takes about six hours.

Filtered solution is further processed through crystallizers, settlers, centrifuges, and calciner, where it finally becomes soda ash. One grade of light ash and two grades of dense ash are produced.

Plant requires about 800,000 gal of water per day. This is supplied through a ten-mile pipeline from

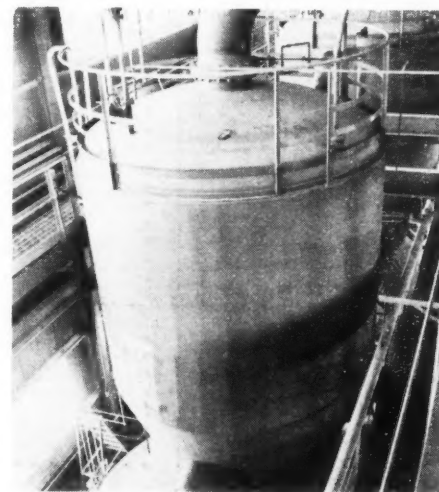


Fig 3—Crystallizer used in trona purification

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the Green River. The overall manufacturing process is the first major change in soda ash production in 41 years. Prior to this, most soda ash was made by the ammonia-soda process.

Results: Foaming has been entirely eliminated. End-product is free-flowing, and shows no discoloration.

(Darco activated carbon is product of Darco Dept., Atlas Powder Co., Dept. CP, 60 E. 42nd St., New York, N. Y. . . . or for more information check CP 6850 on handy Reader Service slip located between pages 2 and 3.)

Color, oxidation, and odor stability are features of modified solid fatty acids . . .

solubility characteristics of acids and derivatives are relatively high

Uses: In soap, cosmetic, textile softener, and grease formulations and in preparation of alcohol-sulfates.

Features: Products exhibit high color, oxidation, and odor stability. Solubility characteristics of the acids and derivatives are similar to distilled tallow acids of high iodine value. Similar solubilities have been noted for sulfated alcohols prepared from these acids. These alcohols also possess good foaming characteristics.

Tests show acids as starting materials for agents having great softening effects on textiles. Greases based on the aluminum soaps of these acids exhibit high shear stability and can be made with good yield. Preliminary investigations indicate these soaps have outstanding gelling properties in hydrocarbon systems.

Description: These solid fatty acids consist primarily of C_{16} and C_{18} mono-carboxylic acids which have been structurally modified. Typical properties are given in the table following:

	Modified Fatty Acids		
	F-994-R	F-995-R	F-996-R
Titer ($^{\circ}$ C)	46	46	47
Iodine value (Wijs)	34	4	1.9
Free fatty acid (as oleic, %)	98	96	98
Total fatty acid (as oleic, %)	102.5	102.3	104.5
Unsaponifiable (%)	0.7	1.0	0.4
Polyunsaturated acid (%)	0.5	0.0	0.0
Color (Lovibond 5/4" cell)	1.3Y/.5R	20Y/6.5R	1.1Y/.5R
Color stability after 2 hr @ 205 $^{\circ}$ C in air	9.8Y/2.5R	—	7Y/2.5R

Odor, if any, is mild and pleasant.

(Modified Fatty Acids are products of the Development and Service Dept., Emery Industries, Inc., Dept. CP, 4300 Carew Tower, Cincinnati 2, Ohio . . . or for more information check CP 6851 on handy form, pages 2 and 3.)

A BASIC source of supply for...



(complies fully with U.S.P. specifications)

A partial list of Oronite Products

Detergent Alkane	Polybutenes
Detergent Slurry	Naphthenic Acids
Detergent D-40	Phthalic Anhydride
Detergent D-60	Maleic Anhydride
Dispersant NI-O	Para-Xylene 95%
Dispersant NI-W	Ortho-Xylene
Wetting Agents	Xylol
Cresylic Acids	Aliphatic Acid
Gas Odorants	Acetone
Lubricating Oil Additives	Hydroformer Catalyst
Sodium Sulfonates	Dispersant FO
Purified Sulfonate	(Furnace Oil Inhibitor)



Consider the advantages Oronite can offer you as a true basic source of supply for Phenol.

Oronite has complete control of all raw materials which it uses in the manufacture of Phenol. Further, the Oronite manufacturing process does not require materials which have often been in short supply in the past.

With Oronite you are always assured of a dependable source of supply for Phenol—good service and product when you need it.

You will find the quality of Oronite Phenol the highest (fully meeting the U.S.P. specifications) and priced competitively.

Contact the Oronite office nearest you for further product and supply information.

ORONITE CHEMICAL COMPANY

38 Sansome St., San Francisco 4, Calif. • Standard Oil Bldg., Los Angeles 15, Calif.
30 Rockefeller Plaza, New York 20, N. Y. • 600 S. Michigan Ave., Chicago 5, Ill.
Mercantile Securities Building, Dallas 1, Texas

When inquiring check CP 6852 on handy form, pgs. 2-3

TAKE IT EASY by Polycor



"Poor Harry! He's still trying to find the right polymer!"

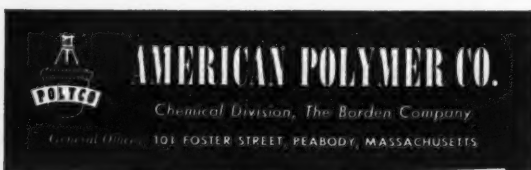
It's a hopeless task trying to keep up-to-date on polymeric resins. The industry comes up with something new and better every day.

So, take it easy! Just contact the American Polymer Company, a firm that does nothing but polymerize—and polymerizes all resins. Then, make it responsible for giving you the properties you need.

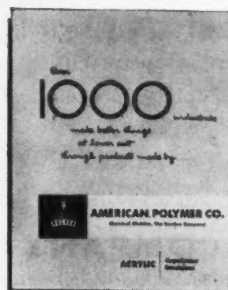
Such a challenge is always welcome at American Polymer Company. Here, we personalize polymers to fit specific applications.

What kind? All kinds! Today it might be a polyvinyl acetate emulsion . . . or solution. Tomorrow, a styrene-butadiene latex . . . a vinyl copolymer emulsion . . . an acrylic copolymer solution . . . or a butadiene-acrylonitrile latex. To date, we've polymerized resins in thousands of different formulas.

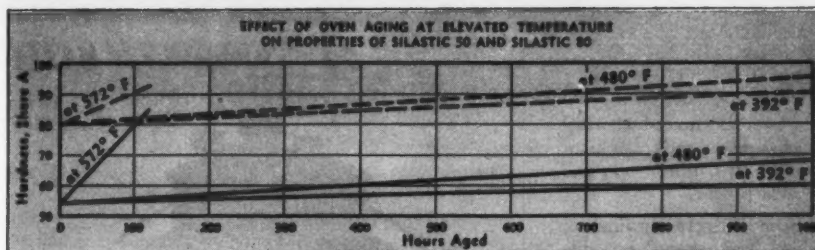
Investigate! Learn more about our personalized polymer service. Have a confidential talk with our representative. Why not write today?



Personalizes ALL KINDS OF RESINS



Send for this NEW comprehensive brochure covering ACRYLIC COPOLYMER EMULSIONS. It will show you how to take advantage of American Polymer Co.'s personalized polymer service. Write American Polymer Co., Peabody, Mass., for brochure P-57, ACRYLIC COPOLYMER EMULSIONS. It's FREE!



Solid lines indicate Silastic 50;
broken lines are Silastic 80

Molded products show wide
range of shades obtainable with
Silastic 50 and 80



materials

Wide range of cured properties made possible by blending two silicone rubbers

Semi-translucent stocks may also be
tinted many colors

Uses: Alone or blended, these stocks may be extruded, molded, laminated, or calendered to make a wide variety of products.

Features: Blending allows fabricators to produce products having a range of physical characteristics, using only two stocks. Cured hardness of blends is in direct proportion to the relative amount of each stock in blend. Hardness of individual stocks is 50 and 80 points (Shore A) respectively.

Stocks are white and semi-translucent. They can be tinted to practically any color and intensity with heat-stable pigments.

Stocks have high tensile strength and elongation. They also exhibit good compression set characteristics and dielectric properties. The silicones are resistant to water absorption and retain their physical properties over a temperature range from -80° to over 500°F.

Description: Silastic 50 and Silastic 80 are

Physical Properties of Silicone Rubbers

	Silastic 50	Silastic 80
Sp gr	1.2-1.3	1.2-1.3
Hardness (Shore A)	45-60	75-85
Tensile strength (psi)	790	650
Elongation (%)	250	150
Compression set (150°C, method B; %)	45	37
Brittle point (°F)	-80	-80
Plasticity (Williams) — unvulcanized stock (mils)	100	125
Tear strength (lb/in)	90	90
Water absorption (% volume change)		
7 days @ room temp	1	1
70 hr @ 212°F	4	2
Dielectric strength (continuous voltage rise, 1/4" electrodes, 1/16" thickness; v/mil)	550	550
Dielectric constant (@ 10°C)	3.07	2.98
Power factor (@ 10°C)	0.002	0.002

(Test samples were molded 5' @ 240°F and cured 24 hours at 480°F.)

When inquiring check CP 6853 on handy form, pgs. 2-3



completely formulated silicone rubber stocks. They can be used alone or blended together.

In certain applications it may be desirable to modify the physical properties even more than by blending. This can also be accomplished to a certain extent, by altering cure time and temps.

Manufacturer gives the following suggestions concerning use of these silicone rubbers:

1) Soften each stock before blending. If only one warm-up mill is used, mill the Silastic 50 first. Then set that stock aside and mill the Silastic 80. Blend by working Silastic 50 into mill load.

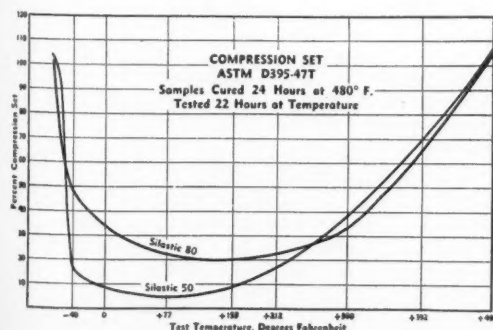
2) Add pigment, if any, when stock has begun to soften. A scraper bar facilitates uniform dispersion with minimum milling.

3) Avoid prolonged milling. Silicones cannot withstand same milling as rubber hydrocarbons.

4) Use mill knife to remove stocks from mill. If in thin sheets, however, use of a scraper bar yields better milled sections. In general, milled stocks are usable up to 24 hr after milling.

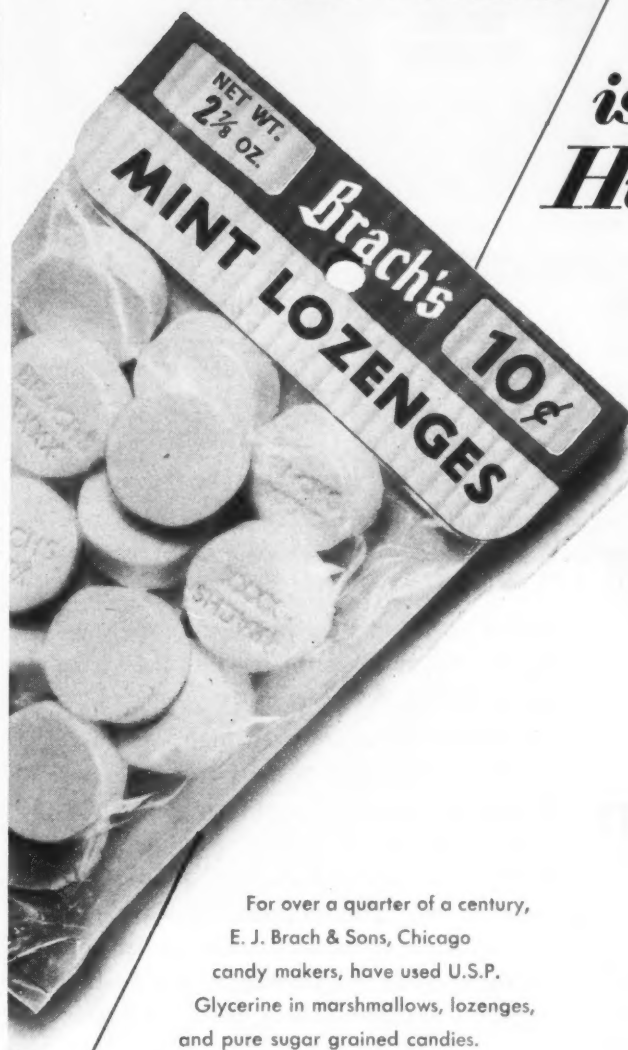
5) Vent the curing oven so volatiles that are given off can be removed. Vapors are non-toxic.

(Silastic Stocks are a product of Dow Corning Corp., Dept. CP, Midland, Mich. . . or for more information check CP 6854, pages 2 and 3.)



since 1928

Glycerine is the Humectant



Keeping foods fresh by its ability to retain moisture is only one element of Glycerine's value to food manufacturers. In candy, for example, Glycerine acts not only as a humectant but also lends smoothness to mixtures, helps to assure more uniform distribution of flavorings, and contributes to palatability.

In compounding flavoring preparations, Glycerine often acts as a solvent, and at the same time adds body to the product. Glycerine is used—as a plasticizer—in the manufacture of meat casings, both animal- and cellulose-type. Glycerine is also used as a plasticizer in many food wrapping materials, such as cellophane and vegetable parchment.

In dozens of other food applications, Glycerine's unique range of properties and freedom from toxicity make it an outstanding favorite. The free booklet, "Glycerine . . . Preferred for Product Conditioning," contains helpful data on Glycerine properties and applications. For your copy, write Glycerine Producers' Association, 295 Madison Avenue, New York 17, N. Y.

For over a quarter of a century,

E. J. Brach & Sons, Chicago
candy makers, have used U.S.P.

Glycerine in marshmallows, lozenges,
and pure sugar grained candies.

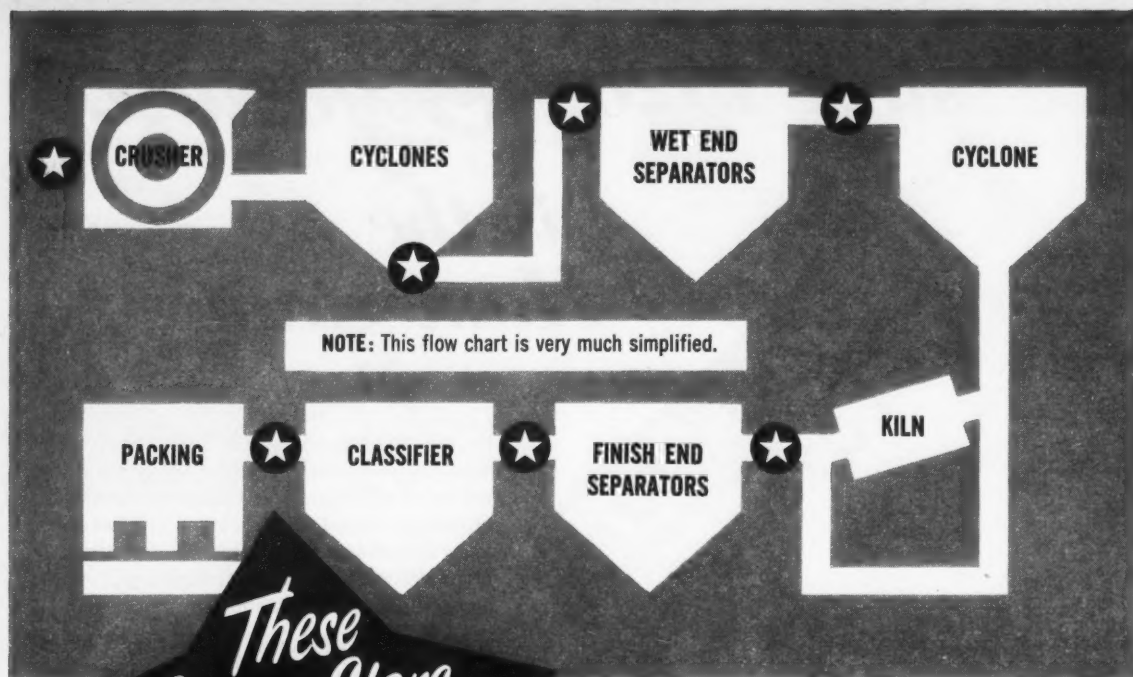
Glycerine's ability to retain moisture
lengthens the shelf life of Brach candies . . .

keeps them fresh and delicious
for much longer periods.



Nothing takes the place of Glycerine

When inquiring check CP 6855 on handy form, pgs. 2-3



*These
Seven Stars
are Seven
EYES*

GUARDING DICALITE QUALITY

... in the most conscientious quality-control system yet devised—beginning with crude selection and ending only when products pass the final test—run on a thief sample *after* bagging.

Actually, these stars represent only major “check points” in what is essentially a continuous quality control system, “built in” to the most modern processing plant ever engineered for the diatomaceous silica industry*. So exact

are the controls on every step that processing can be held within narrower limits than were ever practicable before.

To you, this means even higher quality Dicalite—assurance that every sack of every Dicalite product will be uniform in particle size, particle range and distribution, and in other physical and chemical properties. Whether your processing involves filtration, filler materials, extenders, diluents, carriers, or absorbents, DICALITE's unvarying top quality gives you better processing, better products.

*If you'd like to see the more detailed flow sheet of DICALITE's new Lompoc plant, and learn more about how top quality in diatomite products is achieved, write today for your free reprint of the feature article in the February issue of Industrial & Engineering Chemistry. Write Great Lakes Carbon Corporation, Dept. F-73—612 So. Flower Street, Los Angeles 17.

Dependable
GREAT LAKES **Dicalite**[®]
DIATOMACEOUS MATERIALS

DICALITE DIVISION • GREAT LAKES CARBON CORPORATION • NEW YORK 17 • CHICAGO 1 • LOS ANGELES 17

When inquiring check CP 6856 on handy form, pgs. 2-3

MATERIALS

Low temperature flexibility imparted to pvc resins by plasticizers

Uses: In polyvinyl chloride film, fabric coatings, and garden hose; also plastisols.

Features: Plasticizers impart heat and light stability and good low temperature flexibility to products. They are also useful for controlling viscosity of plastisols.

Description: Plasticizers are di(2-ethylhexyl) adipate (DOA) and di-n-octyl n-decyl phthalate (DNODP). DNODP has lower viscosity and imparts good water resistance to formulations.

(DOA and DNODP are products of Organic Chemicals Div., Monsanto Chemical Co., Dept. CP, 1700 S. Second St., St. Louis 4, Mo. . . or check CP 6857 on handy form, pages 2 and 3.)

Vinyl coating unaffected by heat and water

Uses: As room temperature curing adhesive for porous materials such as wood, hardboard, paper, fabric and leather. As heat-curing adhesive for bonding paper, paper honeycomb and wood to non-porous materials such as metals, ceramics and most plastic materials.

Features: May be used in certain cases to replace resorcinol and epoxy adhesives.

Description: Synco 935 is a cross-linking vinyl copolymer resin emulsion. A thermosetting product producing tough, semi-flexible films, it is especially adapted to coating and adhesive applications where heat, water, and block resistance are required. It has the following typical properties:

Solids (%)	55
Viscosity	1200-1500
Diluent	Water
Storage life (months)	6
Wt per gal (lb)	9.3

Emulsion is a two-part adhesive being combined with accelerator in the proportion of 100 parts to 2-4 parts (by weight) of accelerator. Spreading may be effected by brush, glue spreader, roll coater, or spray. Amount of glue spread will range from 30-6 lb per 1000 sq ft of surface on porous materials to as low as 5-10 for same area of non-porous surfaces.

Sufficient pressure to insure good contact between surfaces to be joined is required. Accelerated mixture will dry sufficiently at room temperature to permit handling in 15-60 minutes. Adequate strength for machining operation will develop in about 2 hours.

For hot press application, platen temperature of 200-350°F may be employed, with resin curing in about 10 minutes over this range. In laminating metal foil to paper, temperatures of 350°F and higher for 2 seconds may be sufficient.

(Synco 935 is a product of Snyder Chemical Corp., Dept. CP, Bethel, Conn. . . or for more information check CP 6858 on handy form, pages 2 and 3.)

LOOKING FOR NEW ???

LOOKING FOR MORE ???

LOOKING FOR BETTER ???

LOOKING FOR IMPROVEMENT ???

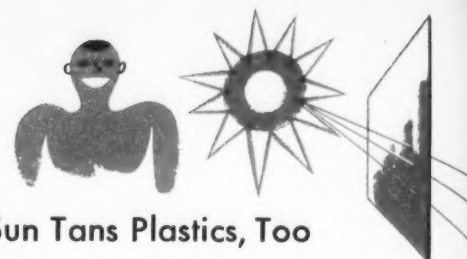
IT PAYS TO SEE **VICTOR**

STABILIZERS

TYPES — Stabilizers 53, 85, 21, and 6162X. Stabilizers 53 and 85 are organic phosphate salts, supplied in soft paste form. Stabilizers 21 and 6162X are liquids used in solvent films, as well as in organosols and plastisols.

USES: Light stabilizers for vinyl plastic films, and coatings. Used in organosol, latex, plastisol and solvent formulations.

Stabilizers



Sun Tans Plastics, Too

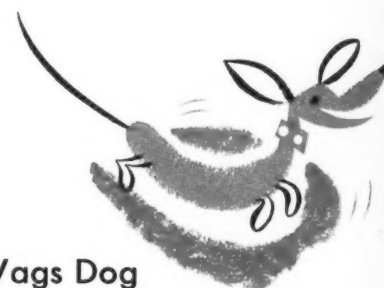
Tanning is fine for sun-bathers. But for vinyl plastic, just the opposite is true. Exposure to sunlight caused some of these plastics to discolor. Since these products were ideally suited for upholstering furniture, automobile seats and for auto seat covers, vinyl makers searched for a solution to the problem. Victor light stabilizers (in paste, powder and liquid form) provided the answer. The problem of color deterioration due to light was eliminated. It pays to see Victor.

TETRAPOTASSIUM PYROPHOSPHATE

Tetrapotassium pyrophosphate is available as a white powdered or unmilled globular material.

USES: Builder and clarifier of liquid soaps. Dyeing compounds. Washing compounds. Boiler water treatment. Synthetic rubber.

K₄P₂O₇



Tail Wags Dog

The development of synthetic rubber on a large-scale basis helped win a war and built a new industry. Originally intended as a temporary substitute for pure rubber, synthetic rubber today proves far superior to the natural product for many purposes. Both Victor formic acid and Victor potassium phosphates are used as chemical intermediates in the manufacture of rubber. It pays to see Victor.

PHOSPHORUS OXYCHLORIDE

Phosphorus oxychloride is a water-white to slightly yellow liquid whose vapors are very irritating. It decomposes in water to yield phosphoric and hydrochloric acids, and is chemically very reactive.

USES: Intermediate in production of organic chemicals. Chlorinating agent. Catalyst.

POCl₃



A New Spark for Cars

Hailed as the greatest gasoline development in three decades, motorists are learning about a new phosphate additive for gasoline. This new discovery is claimed to give up to 15% more power, 150% more spark plug life, plus an increase in gasoline mileage. Victor phosphorus oxychloride is an intermediate used in this great development and plays an important role in the production of the final product. And so it goes. Throughout industry, phosphates take an increasingly versatile and important role. And when it comes to phosphates . . . it pays to see Victor.

DIAMMONIUM

Diammonium crystalline p
Meets all U

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USES: Am
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TRADE M

(U. S. Pat
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V-90 is a
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DIAMMONIUM PHOSPHATE

Diammonium phosphate is a brilliant white, crystalline product, mildly alkaline in reaction. Meets all U. S. Pure Food Law requirements.

GRADES: Crystalline, powdered F. F., and dentifrice.

USES: Ammoniated dentifrices. To control the pH of soda crackers. (U. S. Pat. 2288118). Catalyst for urea and melamine resins. Chrome dyeing of wool. In the manufacture of calcium phosphates for use in phosphors. Flameproofing of paper, wood, textiles, and vegetable fibers. Prevents afterglow in matches. Plant nutrient solutions. Manufacture of yeast, vinegar, yeast foods, bread improvers, and alcohol. Acid cleaner for metal. Ingredient in glass and vitreous enamel.

$(\text{NH}_4)_2\text{HPO}_4$



Top Aide to Bread

To make bread you need yeast. And to grow yeast, Victor ammonium phosphate or Victor phosphoric acid are used. These Victor products encourage or feed the actual growth of the yeast culture. In the production of your daily bread, another Victor phosphate, monocalcium phosphate, acts as a bread improver and prevents "rope" . . . an objectionable bacteriological growth. Thus Victor products and services aid another important American industry. It pays to see Victor.

MONOCALCIUM PHOSPHATE, ANHYDROUS (Heat-treated)

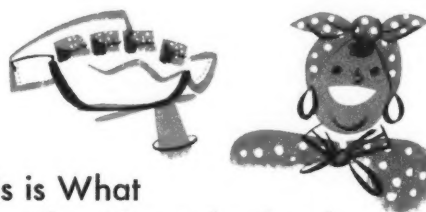
TRADE MARK—V-90®

(U. S. Patents 2160700 and 2160232; Canadian Patents 388809 and 388810)

V-90 is a fine, white, free-flowing powder, each particle of which has a thin, continuous coating of a relatively insoluble phosphate which delays solution when aqueous liquids are added. This makes possible a delayed leavening action.

USES: Manufacture of self-rising flour, self-rising corn meal, pancake flour, prepared mixes, household baking powder, phosphated plain flour, and bakers' angel food cakes. As an ingredient of baking preparations. (U. S. Patents 2160700-1 and 2160232-3)

$\text{CaH}_2(\text{PO}_4)_2$



This is What We Like About the South

Umm-m! Smell that corn bread! But even in the South, corn bread often had a tendency to be heavy and soggy when the sour milk and soda used for leavening did not properly balance each other in acidity and alkalinity. Today, however . . . thanks to new self-rising corn meal made with Victor's V-90 . . . corn bread is unfailingly feather-light and tasty *every time*. Self-rising corn meal sales are booming as the direct result of Victor's anhydrous monocalcium phosphate (V-90). It pays to see Victor.

TRICALCIUM PHOSPHATE

Tricalcium phosphate is a white, crystalline, tasteless solid, which complies with all Federal and State Food Laws.

Tricalcium phosphate NF conforms to National Formulary IX, specifications effective November 1, 1950. Over 95% will pass through a 200 mesh screen. Conditioner for salt, soda, sugar and sulphur. Food enrichment.

Tricalcium phosphate—Victor. A polishing agent for tooth paste and tooth powder. Accepted and listed by the Council on Dental Therapeutics of the American Dental Association

Tricalcium phosphate—granular. Sized so that substantially all passes through a 14 mesh and on a 50 mesh screen.

$3\text{Ca}_3(\text{PO}_4)_2 \cdot \text{Ca}(\text{OH})_2$

When it Rains, They Pour

One of life's petty annoyances is a shaker of salt that won't pour. To prevent caking of salt, soda and powdered sugar, most manufacturers now add small quantities of tricalcium phosphate. Calcium phosphate absorbs moisture and prevents caking. Victor tricalcium phosphate is an excellent conditioner and permits products to remain free-flowing without affecting normal flavor. If you have a caking problem . . . it pays to see Victor.

VICTOR
Dependable Name in
Chemicals
for 56 Years

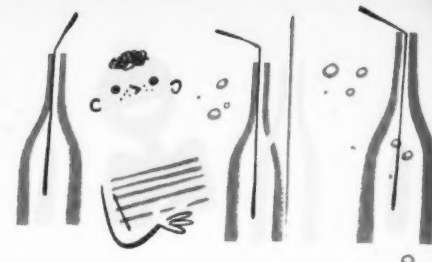
PHOSPHORIC ACID

Phosphoric acid is a clear, colorless, sparkling liquid. All grades meet the requirements of the Federal and State Pure Food Laws.

Concentrations: 75%, 80%, 85% N.F.
115% (Polyphosphoric)

USES: Manufacture of yeast, sugar, soft drinks, imitation jellies, gelatin, and pharmaceuticals. Rustproofing, engraving, railroad car cleaning, refining oil and gasoline, preserving silage. Weighting silk, and dyeing textiles. Chemical polishing and electro-polishing metals, bright-dip baths for aluminum. Manufacture of phosphates, dental cements, glue, ceramics, glass, metal treating compounds, explosives, and fertilizers.

H_3PO_4



What Makes "Pop" Popular

Cola drinks, soda or just plain "pop." Call them what you will but the great popularity of most carbonated beverages is due in part to the tart, tangy taste imparted by just a "touch" of food grade phosphoric acid. The remarkable purity of Victor phosphoric acid accounts for the fact that it acidulates millions of bottles of soft drinks. It pays to see Victor.

SODIUM ACID PYROPHOSPHATE

TRADE MARKS — Victor Cream, Perfection, B. P. Pyro

Victor sodium acid pyrophosphates are white powders whose purity meets the requirements of the Federal and State Pure Food Laws.

USES: Baking acid for doughnut flours, prepared flours. Manufacture of commercial baking powders, and baking creams. Conditioning oil well drilling muds. Acid type metal cleaner.

$Na_2H_2P_2O_7$



Better Donuts for Dunkers

There are many different donut "mix" formulas. Each requires its own tailor-made leavening agent in order to avoid excess of "cripples" and high grease absorption. Victor "custom-made" phosphate leavening agents are used by the leading donut mix manufacturers. That's one of the major reasons why your "sinkers" taste so good. If an improvement in leavening can benefit your product it will pay you to see Victor.

VICTOR
Chemicals

VICTOR CHEMICAL WORKS
141 West Jackson Boulevard
Chicago 4, Illinois



Many in-
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Sperm oil
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MARCH,

Many industrial applications found for sperm oil products . . .

oils and waxes exhibit variety of properties

Sperm oil—Composition is largely higher fatty alcohol esters of higher fatty acids. (Chain length of each is about 16.) The esters are, for the most part, mono-unsaturated. It is a fine lubricating oil and is used alone or in formulations. Viscosity index is high. Properties include oxidation resistance, higher affinity for metals than for water, non-corrosiveness, and ease of sulfurization. Oil dissolves in organic solvents. Cloud point can be lowered by dewaxing.

Air-blown sperm oils—These are mixtures of oxidized, polymerized, hydroxylated higher alcohol esters of fatty acids, and contain 7-8% free fatty acids. They are readily saponified or emulsified.

Hydrogenated oils—Solids at room temperature, they are composed largely of saturated esters, and contain some triglycerides. The alcohol esters act as coupling agents. Slow to saponify, they can form hard sodium and calcium soaps. The oils are alkali-resistant and are not readily decomposed.

Spermaceti wax—Crystal white odorless wax cake, obtained from dewaxing sperm oil, is almost pure cetyl palmitate. In products it imparts a stiffness which is easily broken, and a satin-like smoothness and brilliant sheen. It lowers mp of blends in which it is incorporated.

(Sperm oil products are available from Chemical Products Div., Archer-Daniels-Midland Co., Dept. CP, 2191 W. 110th St., Cleveland 2, Ohio . . . or check CP 6859 on handy form, pages 2 and 3.)

Dielectric properties of silicone insulating resins compared

Single sheet contains concise comparison of properties and performance of leading silicone electrical insulating resins. It reviews 5 coating and impregnating varnishes, an adhesive, and 6 bonding and laminating resins. Each is described individually, along with recommended applications. Tables compare resins with each other for 9 properties: dielectric strength, wt loss after 3 hr at 250°C, solids content, color, sp gr, viscosity, drying time, flash point, solvents, thinners, and shipping wt.

Also included are curves showing thermal life, based on 50% retention of dielectric strength, of silicone dipping varnishes, cloth coating resins.

Reference Sheet 10-227 is issued by Dow Corning Corp., Midland, Mich. When inquiring specify CP 6860 on handy form, located between pages two and three.

For more information on product at left, specify CP 6861 . . . see information request blank between pages 2 and 3.

NOW
the cheapest tallow-based
synthetic detergent on the market

**IGE PON
TE-42**

AVAILABLE IN
BULK QUANTITIES

YOU CAN DO IT BETTER WITH AN IGE PON

ANTARA CHEMICALS

DIVISION OF
GENERAL DYESTUFF CORPORATION
435 HUDSON ST., NEW YORK 14, N.Y.

SALES OFFICES:

New York • Boston • Providence • Philadelphia • Charlotte, N. C.
Chattanooga, Tenn. • Chicago • Portland, Ore. • San Francisco
IN CANADA: Chemical Developments of Canada Limited, Montreal

ANTARA is now offering a slurry-form IGE PON, a heavy duty detergent based on tallow that features outstanding detergency at lowest possible cost. For warm or hot water washing of wool, cotton and synthetic fibers, try this new "work-horse" IGE PON.

IGE PON TE-42, like other IGE PON T brands, possesses excellent stability to acid, alkali and hard water and has the same wide range of applications.

IGE PON TE-42 is especially recommended for kier boiling of cotton, soaping of vats and naphthols, print washing, wool scouring, hosiery boil-offs, one-bath dyeing and washing, scouring of woollens after fulling, and in any operation where high detergency is required.

Write today for technical data and a sample of IGE PON TE-42.



ANTARA CHEMICALS
435 HUDSON STREET, NEW YORK 14, N.Y.

Please send me technical data
and a sample of IGE PON TE-42

NAME _____
POSITION _____
COMPANY _____
ADDRESS _____
(Street) (City) (State)

When inquiring check CP 6862 on handy form, pgs. 2-3

PIPELINE TO TOMORROW

It has been estimated that by 1964 more than half of all chemicals produced in this country will be "petrochemicals" derived from oil field and refinery gases.

Today, they make possible high-octane motor fuel and synthetic rubber, textile fibers and plastics, drugs and detergents. Tomorrow, they will further revolutionize daily life. With more petrochemicals at the disposal of research groups, anything will be possible.

National Petro-Chemicals Corporation converts pipeline gases into intermediates, such as Isobutane, Ethyl Chloride and Ethyl Alcohol, for processors and manufacturers of finished products. A polyethylene plant will come on stream early in 1955.

The range of chemicals which can be made from natural gas is wide. We invite producers to think of National Petro-Chemicals Corporation as a part of their production line and to consult with us on raw material requirements.

NATIONAL PETRO-CHEMICALS

C O R P O R A T I O N

A joint enterprise of National Distillers Products Corporation and Panhandle Eastern Pipeline Company

120 BROADWAY, NEW YORK 5, N. Y.

When inquiring check CP 6863 on handy form, pgs. 2-3

MATERIALS

Stabilizers, anti-static compounds for vinyl resins

Outstanding properties of anti-static agents and stabilizers are described in 6-page technical bulletin. Stabilizers prevent discoloration and decomposition of all vinyl chlorides (polymers or copolymers), especially when exposed to heat, bright sunlight, or ultraviolet rays. They also prevent discoloration of high molecular aromatic plasticizers.

Bul "Duranyls for Vinyl Resins" is issued by Alframine Corp., Dept. CP, 4731 East 52nd Drive, Los Angeles 22, Calif. When inquiring specify CP 6864 on handy form, pages 2 and 3.

Latex paint emulsions given freeze-thaw stability . . .

additive also promotes uniform spreading

Uses: To give freeze-thaw stability to latex paints compounded with commercially available latices.

Features: Product stabilizes latex paints from coagulation beyond reemulsification when frozen. It also resists the effects of aging that promote instability of the system and its consequent coagulation if later subjected to lower temperatures.

Brushability of the paint is improved, as product minimizes drag or pull. Uniform spreading over surface is promoted. Material also retards too-rapid drying of paint film, giving wet edge which eliminates lapping.

Description: Nopco 2225-C is a reddish-amber liquid, dispersible in water. It may be added to the formulation at any point in the process. Manufacturer recommends product be used in a ratio of five lb per 100 gal of paint.

Material as supplied is 100% active. Its acid value is less than 5; alkali (%) is 1.6 ± 0.1 .

Being a surface-active agent, product decreases paint viscosity. This can be corrected by addition of small amounts of thickener to permit full addition of formula water.

(Freeze-thaw stabilizer is a product of Nopco Chemical Co., Inc., Dept. CP, Harrison, N. J. . . . check CP 6865 on handy form, pages 2 and 3.)

Looking for a chemical raw material or intermediate? . . .

The alphabetical Product Directory (pages 214 to 217) will help you find it in a hurry. This listing, started by CHEMICAL PROCESSING in 1938, "puts the finger" on all subjects, products, equipment in editorial columns and advertisements of each issue.

MATERIALS

Ion exchange resin eliminated as variable . . .

reproducible procedures possible with standardized resin

Designed to provide source of pure ready-to-use resins with known properties, preprocessed ion exchange resins are now available.

Suitable for chemical, medical, and physical laboratory applications, material permits standardized, reproducible procedures to be carried on. Resin is eliminated as experimental variable.

Resins, produced from material supplied by Dow Chemical Company, are known as Dowex 50 (cation exchange), and Dowex 1, 2, and 3 (anion exchange), and are the stable styrene type. Capacities range from 5.2 milliequivalents/dry gm for Dowex 50, to 3.0 milliequivalents for Dowex 2. Products are completely sized; purified by alternate acid, base, and organic-solvent cycles; and defined by individual analysis on each batch. Analysis includes moisture content, cross linkage, capacity, size distribution and porosity.

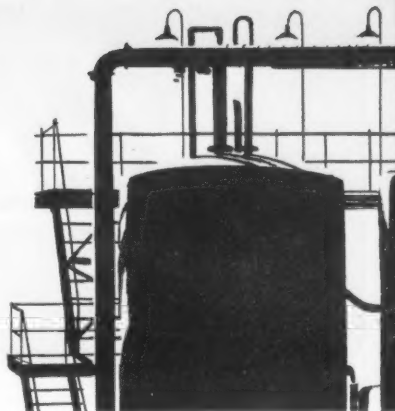
(Marketed by Bio-Rad Laboratories, Dept. CP, 800 Delaware St., Berkeley 9, California . . . or for more information check CP 6866 on handy form, pages 2 and 3.)

Properties, new uses of vermiculite

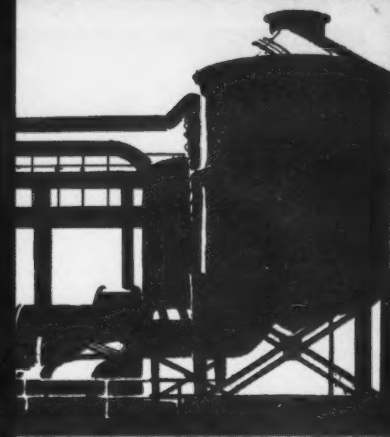
Chemical and physical properties of vermiculite (hydrated magnesium-aluminum-iron silicate) are summarized in 8-page report. Base exchange characteristics, solubility, water absorption, chemical carrier capacity pH, and thermal properties are given. Applications as loose fill insulation, catalyst, filler, and packing material are described.

Bul "Vermiculite" is issued on letterhead request to Dept. R, Zonolite Co., Dept. CP, 135 S. LaSalle St., Chicago 3, Ill.

For more information on product at right, specify CP 6867 . . . see information request blank between pages 2 - 3.



more and more
manufacturers prefer
WITCO STEARATES
because . . .



1. They're manufactured in Witco's own plants, under strictest quality control.
2. They're pure and uniform, with the same dependable performance characteristics every time.
3. They benefit from Witco's long experience with many different grades and types of stearates, for many different end uses.

for every important use, there's a WITCO STEARATE



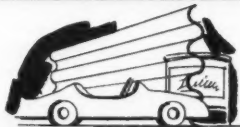
For COSMETICS, PHARMACEUTICALS — Magnesium, Sodium, Zinc Stearates, regular and special grades.



For GREASES—Aluminum Stearates, medium to extremely high gel. Barium, Lithium, Lithium Hydroxy.



For PAINTS, VARNISHES, LACQUERS, INKS—Aluminum, Calcium, Magnesium, Zinc Stearates for improved suspension, flattening. Lacquer Grade Zinc Stearate for outstanding sanding sealers.



For PLASTICS—Aluminum, Sodium, Calcium, Magnesium, Lithium Stearates, gelling agents and heat stabilizers for plastigels. Lead, Barium, Cadmium, Calcium Stearates, vinyl stabilizers. Stearates for internal and mold lubrication. Also special stabilizers.



For RUBBER—Disperso Aluminum, Calcium and Zinc Stearates, water dispersible for excellent spreading, uniform film deposition. Zinc Stearate for dusting agent. Barium Stearate for high temperature applications.



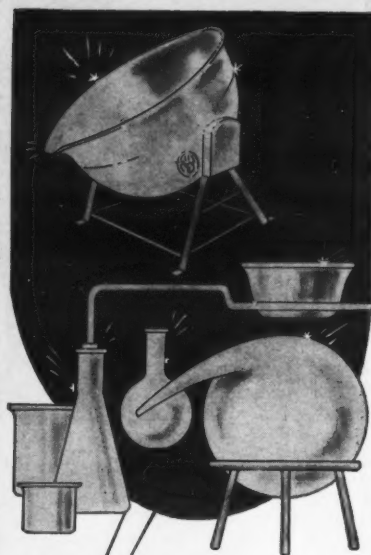
WITCO CHEMICAL COMPANY

260 Madison Avenue, New York 16, N. Y.

Los Angeles • Boston • Chicago • Houston • Cleveland
San Francisco • Akron • London and Manchester, England

WITCO has developed many stearates for special uses. If you have a stearates problem, consult our Technical Service Department.

Write today for complete information, samples or technical assistance.



IT COSTS LESS— to do a FASTER, EASIER, MORE EFFICIENT cleaning job on your equipment.

Whether it's glass piping systems, metal, plastic or glass lined tanks, food kettles, laboratory equipment, optical lenses, etc. ALCONOX can, and will clean thoroughly, safely and at a low cost of less than 2½ cents per gallon.

Its extremely high degree of wetting power, stability and penetration has already placed Alconox at the top of the list: its low cost only adds to this distinction.

We invite you to check all brands and their prices. Then compare with WORLD-FAMOUS, TIME-PROVEN ALCONOX.

Convince yourself: Then place your order. Literature, samples and the name of your nearest distributor on request.



Available in 50, 100 and 300 lb. drums

ALCONOX, INC.

WETTING AGENT DETERGENT

61-63 Cornelison Ave. Jersey City 4, N. J.

When inquiring check CP 6868
on handy form, pgs. 2-3

MATERIALS

Presents technical data on methyl amyl acetate

Physical and physiological properties, specifications and shipping data, resin solubilities, and data on performance of methyl amyl acetate in nitrocellulose lacquers are given in technical bulletin. Material is a high-boiling, slow-evaporating solvent used in general-purpose spray lacquers and in brushing and dipping lacquers. It is also used in working with antibiotics.

Bul F-6264 is issued by Carbide and Carbon Chemicals Co., a Div. of Union Carbide and Carbon Corp., Dept. CP, 30 E. 42nd St., New York 17, N. Y. When inquiring specify CP 6869 on handy form, pages 2 and 3.

Hardness of water has no effect on pesticide emulsifier . . .

agent is efficient in specific toxicant formulations

Uses: As an emulsifier for DDT, Chlordane, Toxaphene, Malathion, and certain herbicides.

Features: Works in ultra soft to hard waters. Emulsifier fits into chemical compatibility range of suggested toxicant and solvent formulations, withstands aging in the field.

Description: Emcol H-83A is a blend of poly ethoxy ethers, esters, and sulfonated oils. Moisture is less than 1%, and should not be introduced into formulation. Sp gr is 1.01 to 1.03. Emulsifier pours as low as 46°F. Product tends to become viscous below this temperature and may require stirring when warmed up from below it.

No insecticidal or herbicidal claims are made for the material.

(Pesticide emulsifier is a development of The Emulsol Corp., Dept. CP, 89 E. Madison St., Chicago 3, Ill. . . . or for more information check CP 6870 on handy form, pages 2 and 3.)

Thickens or gels non-polar organic liquids and those of intermediate polarity . . .

gels are short, thixotropic, promote resistance to bleeding

Uses: Thickening or gelling agent for organic liquids and resins that are non-polar or of intermediate polarity.

Features: Gels formed are short, thixotropic. They promote resistance to bleeding in usages where this is a problem. They also provide reinforcing characteristics which contribute to the strength of many resinous compositions. Thickening action is relatively permanent and unaffected by temperature changes.

Description: An organic derivative of a hydrous aluminum silicate mineral, Bentone 34 is supplied as a finely divided cream colored powder. Sp gr is 1.80.

Xtracts

"Elvanol"—Water-Soluble Resin Has Versatile Applications



Toughness, high tensile strength and flexibility of films—the characteristics of "Elvanol" polyvinyl alcohol—are not often to be had in water-soluble products. Practically tasteless and odorless, this colorless resin can be

used to make grease- and gas-proof coatings and films for application where many other resins would be unsuitable. The viscosity and solids content of water solutions may be easily varied to meet specific requirements. Plasticizers, wetting agents, fillers, and other modifying agents may be added directly to solutions to modify adhesive, emulsifying, film-forming, or water-resistant properties of "Elvanol."

Here are some examples of products and places where "Elvanol" can be used profitably: Knitting and weaving sizes for synthetic and natural textile fibers; modifier for shrink- and crush-resistant textile finishes; binder for non-woven fabrics and ribbons; grease-proofing and gas-proofing paper; water-resistant adhesives for use on paper, textiles and various films; in preparation of non-blocking remoistenable adhesives; emulsification of oils, fats, waxes, synthetic and natural gums and resins; dispersing agent in emulsion polymerizations; thickener for natural or synthetic rubber latices and resin emulsions; pigment binder in paper coatings; gloss ink size for paper; improving abrasion resistance and strength of paper; binder for ceramic bodies and glazes before firing; binder, emulsifier, thickener and stabilizer in dispersions of decorative materials, shoe dressings, leather finishes, and cosmetic preparations; clear oil-proof, solvent-proof, gas-proof, or water-soluble film; film protection for highly finished or tarnishable surfaces; photosensitive coat-

ing for printing plates and decorating stencils.

Several grades of "Elvanol" are available, each with different physical and chemical properties, permitting a selection of the grade best suited to specific requirements. For more information, just clip the coupon below!

Sodium Cyanide Useful in Organic Synthesis



In addition to its many uses in the metal industry NaCN is a key material in the production of numerous organic chemical intermediates. Prime function

is to introduce a nitrile (CN) group into the molecular structure being synthesized. Highly reactive, sodium cyanide can be used to make a variety of important intermediates for dyes, plastics, pharmaceuticals, etc. Here are a few examples of what this important reagent can do in organic synthesis:

Sodium cyanide with:

Sodium chloroacetate =
Sodium cyanoacetate.

Benzyl chloride =
Phenylacetonitrile.

Pyridine sulfuric acid =
Nicotinonitrile.

Acetone =
Acetone cyanhydrin.

Formaldehyde =
Formaldehyde cyanhydrin.

Aniline and formaldehyde =
Phenylglycine.

Ethylenediamine and formaldehyde =
Ethylenediamine tetraacetic acid.

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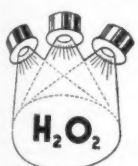
Du Pont Book on Handling Sodium

Sodium metal has established its importance as a reagent for reduction, condensation, refining reactions, polymerization, dehalogenation, dehydrohalogenation and a host of other reactions. When used as a dispersion it brings new speed to reactions—greater efficiency, improved product yields.

Recognizing the widespread use of sodium, Du Pont has produced a booklet on recommended procedures for handling sodium in solid, liquid or dispersion form. It tells how this highly reactive metal can be safely used in plant operations... what equipment is needed, what precautions should be taken. For your copy, check the coupon.



Hydrogen Peroxide Splits Benzene Ring



The powerful oxidizing activity of "Albone" hydrogen peroxide can be used to advantage in a large number of organic reactions involving the benzene ring. Quinoline is oxidized by hydrogen peroxide to quinolinic acid from which carbon dioxide drops out to leave nicotinic acid—useful in making Vitamin B Complex. Oxidation of a Beta-naphthol with a peracid made from hydrogen peroxide produces orthocarboxy cinnamic acid for soap and perfume manufacture. Cleavage of cyclopentanone to glutaric acid and cyclohexanone to adipic acid is accomplished by hydrogen peroxide.

Water is the only by-product from the peroxide reaction and no other salts are introduced into the solution.

For more information on "Albone" hydrogen peroxide, its properties and applications, just send the coupon.

E. I. du Pont de Nemours & Co., (Inc.)
11507 Nemours Bldg., Wilmington, Del.

Please send me literature and information on:

- ☐ Sodium
- ☐ "Albone" Hydrogen Peroxide
- ☐ "Elvanol" polyvinyl alcohol
- ☐ Dimethyl Hydantoin
- ☐ DMH-F resin
- ☐ MDMH
- ☐ Elchem 1273

Name _____
Title _____
Firm _____
Address _____
City _____ State _____

CP-34

When inquiring check CP 6871 on handy form, pgs. 2-3

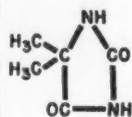
New Products

DIMETHYL HYDANTOIN

White, crystalline solid
—Mol. Wt. 128.13.

TYPICAL REACTIONS:

Substitutions can be made in the imino and carbonyl groups; fission of the ring is possible with mineral acids and dilute alkali solutions; mono- and di-N-halogen derivatives are secured by halogenation.



MONOMETHYLOL DIMETHYL HYDANTOIN (MDMH)

Contains 19% combined formaldehyde; reacts as odorless donor of formaldehyde which is released on alkaline side.

DIMETHYL HYDANTOIN—FORMALDEHYDE RESIN (DMH-F)

Readily soluble in water and common organic solvents. Solutions are of low viscosity even at high solids content. Compatible with a variety of plasticizers, extenders and resins. Forms films which can be insolubilized.

ELCHEM—1273

Alkali Soluble Vinyl Polymer

Insoluble in water but can be dissolved in alkali solutions and later insolubilized by removal or neutralization of the alkali. Good film former with fair binding power for pigments. Forms high-viscosity solutions at low concentration. Compatible with "Elvanol," "Elvacet" polyvinyl acetate and other resins and plasticizers.

Check coupon for more information about these new products.



MATERIALS

It is highly inert insofar as its topical or systemic effects on the animal organism.

Agent must be incorporated thoroughly in order to secure full development of properties. Addition of a small quantity of polar solvent (such as methanol or acetone) often facilitates maximum gelation in non-polar liquids. Heating between 150 and 175°F also helps.

(Bentone 34 is a product of National Lead Co., Dept. CP, 111 Broadway, New York 6, N. Y. . . . or for more information check CP 6872 on handy form, pages 2 and 3.)

Stabilizes halogen-containing organic materials . . .

lead compound is effective in formulations subjected to heat, UV

Uses: For the stabilization of halogen-containing organic materials, such as polyvinyl chloride and chlorinated paraffins, and as a curing agent for chloro-sulfonated polyethylene.

Features: Product's high reactive lead oxide content eliminates HCl released during heat degradation of PVC. Material acts also as a UV light screening agent and a pigment. In most instances, concentrations of 1 to 2 parts per 100 of resin are sufficient. When used as a curing agent for chloro-sulfonated polyethylene, up to 35 parts/100 may be necessary in vulcanization, and about 20 parts/100 in coating formulations.

Description: Stayrite #229 contains 88% litharge. It has the following physical properties:

Appearance	White powder
Sp gr	5.9
Refractive index	2.0
Solubility	Insol. in H ₂ O & common sol.

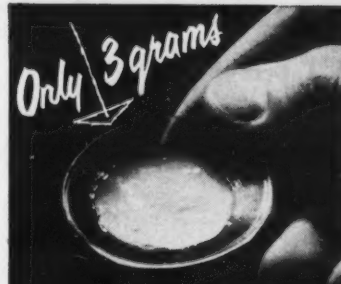
(Stayrite #229 is a product of Witco Chemical Co., Dept. CP, 260 Madison Ave., New York 16, N. Y. . . . or for more information check CP 6873 on handy form, pages 2 and 3.)

Shows methods of refining and testing tall oils

Booklet describes methods of refining and testing tall oils and offers complete information on materials for storage and processing equipment. Principal chemical reaction involving fatty and rosin acids of tall oil are discussed and typical reactions illustrated.

Major portion of bulletin is devoted to industrial applications for tall oils and include water soluble soaps, sulfonated tall oils, non-ionic detergents, metallic soaps, esters, and sulfurized tall oils.

Bul C-53 is issued by K. A. Steel Chemicals Inc., Dept. CP, 7450 Stony Island Ave., Chicago 49, Ill. When inquiring specify CP 6874 on handy form, pages 2 and 3.



of Dow Corning
ANTIFOAM A
KILLS FOAM IN

10 TONS
of asphalt or
10 tons of alkyl resin

2630 lbs.
of fermenting wine

1474 lbs.
of soap tallow

500 lbs.
of metallic soaps

Save space now wasted on foam; cut processing time; eliminate waste and fire hazard of overflowing foam.

Use Dow Corning Antifoam A, the most versatile and efficient defoamer on the market.

DOW CORNING ANTIFOAM AF EMULSION
New water dispersible emulsion of Antifoam A is equally versatile, equally effective in the industrial processing of aqueous foamers.

mail coupon TODAY for
free sample

DOW CORNING SILICONES Dow Corning Corporation
Midland, Mich., Dept. BB-15

Please send me data and a free sample of
☐ Dow Corning Antifoam A
or ☐ Dow Corning Antifoam AF Emulsion

NAME _____
COMPANY _____
ADDRESS _____
CITY _____ ZONE _____ STATE _____

When inquiring check CP 6875 on handy form, pgs. 2-3



A "COLUMBIA" Trade-Mark Activated Carbon Solvent Recovery Plant . . .

. . . at the end of this duct is saving this man thousands of dollars a year. His installation is one of the many that save industry more than \$150,000,000 annually by recovering over 2 billion pounds of solvent vapors!

COLUMBIA Activated Carbon solvent recovery plants are used in a variety of industries—plastics, rubber, synthetic fibers, smokeless powder, rotogravure printing, lacquer coating, and many others where solvents are vaporized.

Alcohols, esters, ethers, ketones, hydrocarbons, chlorinated compounds, and practically all mixtures of these or other low-boiling solvents are recovered efficiently and economically.

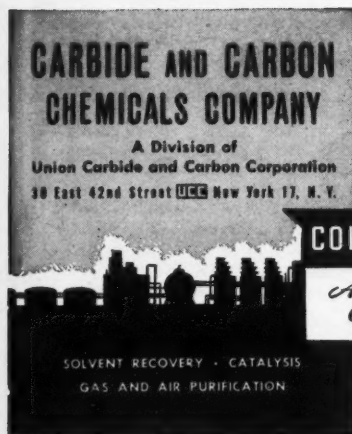
EFFICIENCY OF RECOVERY: 99%+ of the solvent vapor that reaches most plants is recovered.

COST OF RECOVERY: Less than 0.5¢ per pound of solvent, in many cases.

If you vaporize solvents in your process, let us help you. We can design and supply a complete solvent recovery system to fit your specific requirements.

Write today for our booklet "How 7 Industries Saved \$150,000,000 a Year with COLUMBIA Activated Carbon," Form 6658.

The term "Columbia" is a registered trade-mark of Union Carbide and Carbon Corporation



COLUMBIA

Activated Carbon

SOLVENT RECOVERY • CATALYSIS
GAS AND AIR PURIFICATION

When inquiring check CP 6876 on handy form, pgs. 2-3

MATERIALS

Announces new C¹⁴ tagged compound

Recent addition of maleic-1-C¹⁴ anhydride to line brings manufacturer's number of radiocarbon compounds to 94. Maleic anhydride is an important intermediate which forms polymers with many compounds. Tagged molecule will be useful in studying mechanism of these polymerizations as well as their structures.

(Tagged maleic anhydride is a product of Nuclear-Chicago, Dept. CP, 223 W. Erie St., Chicago 10, Ill. . . . or for more information check CP 6877 on handy Reader Service slip located between pages two and three.)

Textile soiling eliminated by processing oil . . .

built-in detergent removes dirt from fibers during manufacturing operations

Uses: Products are used as processing oils in synthetic fabric operations.

Features: Oils have built-in detergent and are said to be compounded to give best balance of fiber-to-metal lubrication, adequate antistatic control, and quick spreading action necessary for high-speed equipment.

Description: Nopco 1065-A is reported to produce static-free, even-tension warps desirable for nylon or acetate tricot. It is recommended as a topping oil for slasher-sized yarns, as an antistatic quilling oil for cops, and as a coning oil for even-density packages.

Nopco 1056-AR is designed for fine denier yarns demanding low tension control. Nopco 1125-P is used for yarns which will become extremely dirty in processing, such as in premium lace-making where fibers become impregnated with graphite. Manufacturer states it is self-cleaning and requires no additional soap.

(Textile processing oils are products of Nopco Chemical Company, Dept. CP, Harrison, New Jersey . . . or for more information check CP 6878 on handy form, pages 2 and 3.)

Bul lists results of lab tests on polyvinyl resin glues

Bulletin is 14-page evaluation of some polyvinyl resin glues. Purpose of study was to examine one of the newer vinyl copolymers in comparison with a well established vinyl copolymer and with animal glue. Bulletin shows results of seven separate tests to determine shear strength and wood failure values.

"Polyvinyl Resin Glues" is issued by National Adhesives, a Div. of National Starch Products Inc., Dept. CP, 270 Madison Ave., New York 16, N. Y. When inquiring specify CP 6879 on handy form, pages 2 and 3.

Pigment for acrylic

can

Uses:

Features: surface, standing resistance

Description: pigment, gold and Finish w min. It

(Finish 13799 S check CP

Free-flow from vinyl

does

Uses:

garden h gaskets.

Features: tained w long mi absorbs mix that

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Sodium in illustr

Sodium tion, in 30 of pa bullet

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"Sodium Chemi New 6881

MATERIALS

Pigmented and metallic finishes for acrylic plastics . . .

can be applied to first or second surfaces

Uses: As finish for acrylic plastic.

Features: Finish can be applied to first or second surface. Pigments are non-bleeding, and have outstanding color stability. Grease, humidity, and soap resistance is excellent.

Description: Logoquant SF252 is available in pigmented colors and metallics, and unpigmented gold and aluminum metallics. It has good gloss. Finish will air dry to touch in approximately five min. It will pack dry in 1-3 hr.

(Finish is a development of Logo, Inc., Dept. CP, 13799 South Avenue "O", Chicago 33, Ill. . . . or check CP 6880 on handy form, pages 2 and 3.)

Free-flowing dry mix obtained from vinyl resin . . .

does not require high temp or long mill cycles

Uses: For molded and extruded items, such as garden hose, wire insulation, and refrigerator door gaskets.

Features: A free-flowing dry mix can be obtained without subjecting blend to high temp and long mill cycles on mills or Banburys. Material absorbs liquid plasticizers to give a freely flowing mix that is not "wet."

Description: Pliovac DB8OV is a dry blending grade of polyvinyl chloride resin. Manufacturer accredits excellent dry blending properties to particle size and shape of resin.

(Dry blending PVC resin is a product of Chemical Division, Goodyear Tire and Rubber Co., Dept. CP, Akron 16, Ohio . . . or for more information check CP 6880A on handy form, pages 2 and 3.)

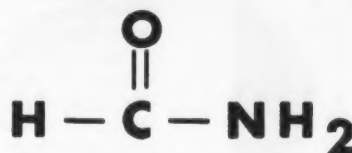
Sodium dispersions covered in illustrated booklet

Sodium dispersions, their properties, preparation, and industrial application, are reviewed in 30-page booklet. It reviews developments of past three years, and enlarges upon similar bulletin released in 1950.

Booklet includes techniques for preparing sodium dispersions, diagrams of equipment used, dispersion formulations (with tables), methods for using formulations, illustrations of sodium preparation and shipment, and sodium dispersion preparation and handling. Included are sections on handling procedures, analysis of sodium dispersions, availability, and bibliography.

"Sodium Dispersions" is issued by U. S. Industrial Chemicals Company, Dept. CP, 120 Broadway, New York 5, N. Y. When inquiring specify CP 6881 on handy form, pages 2 and 3.

AN IDEA-CHEMICAL FROM DU PONT



FORMAMIDE

SOLUBILITY DATA

Completely miscible with water, methanol, ethanol, acetone, acetic acid, dioxane, ethylene glycol, glycerol, and phenol.

Very slightly soluble in diethyl ether and benzene.

Dissolves a number of inorganic salts, including the chlorides of copper, lead, zinc, tin, cobalt, iron, aluminum and nickel; the acetates of the alkali metals; and certain sulfates and nitrates.

Dissolves casein, gelatin, animal glue, glucose, zein, tannin, starch, lignin, polyvinyl alcohol and cellulose acetate.

Has softening action on cellulose and cellulose nitrate.

IMPORTANT CHEMICAL PROPERTIES

Reacts with alcohols on heating to give formic esters and ammonia.

Can be dehydrated catalytically to form hydrocyanic acid.

Forms methylol derivative with formaldehyde.

Here's a versatile solvent and useful intermediate you should investigate

Du Pont Formamide, available with 97.0% minimum Formamide content, is a clear, viscous liquid with a faint odor of ammonia and a boiling point of 210° C. A useful chemical in a wide range of industries, Du Pont Formamide is an economical and efficient solvent for many heavy metal chlorides and other inorganic salts . . . for a variety of organic compounds including acetic acid, phenol, gelatin, lignin, glucose and cellulose.

In addition to its solvent properties, Du Pont Formamide is a useful intermediate in vitamin synthesis, finds application in the manufacture of formic and hydrocyanic acids, and is used as a softener for animal glues and paper.

Why not investigate the use of Du Pont Formamide in your business? We'll be glad to send you more information on this versatile chemical—specifications, properties, suggested uses, etc. Just clip the coupon below or write on your letterhead to E. I. du Pont de Nemours & Co. (Inc.), Polychemicals Department, Wilmington 98, Del.

GRADE AND AVAILABILITY: Du Pont Formamide, available with 97.0% min. Formamide content, is shipped in tank cars and 55 gallon non-returnable steel drums (net. wt. 500 lbs.).

Serving Industry with Idea-Chemicals

AMIDES • ALCOHOLS • ESTERS • ORGANIC ACIDS • SOLVENTS • RESINS



Better Things for Better Living
... through Chemistry

Polychemicals
DEPARTMENT
CHEMICALS • PLASTICS

E. I. du Pont de Nemours & Co. (Inc.)

Polychemicals Department 583, Wilmington 98, Delaware

Please send me more information on Du Pont Formamide—specifications, chemical and physical properties, suggested uses, bibliography, etc. I am interested in evaluating Formamide for the following applications:

Name _____ Title _____

Firm _____

Address _____

City _____ State _____

When inquiring check CP 6882 on handy form, pgs. 2-3



"Imitation" IS A FLATTERING WORD

VERSENE® VS IMITATIONS

The Versenes are our products. We originated and developed them. We alone manufacture them. They are good products. This is pointed out by the fact that others are now beginning to imitate them. In one sense this is rather flattering because it indicates an actual superiority of the Versenes. But in another, it creates a confusing and somewhat deceptive situation for those who actually prefer the original Versenes.

VERSENES VS COMPARISON

"Just like Versene," "just as good as Versene," "the same thing as Versene." These are all sales arguments which imitators must use.

And, it is interesting to note, that it is extremely difficult for them to even explain their imitations without direct comparison to the originals.

VERSENE® SETS STANDARDS

In Agriculture, Industry or Medicine — wherever and whenever trouble is caused by metal ions in solution you can count on chelate chemistry and the Versenes for help. Extremely stable at high temperatures throughout the pH range, these powerful Chelating Agents are guaranteed for uniformity of chelating power. We will be glad to share with you the more than a generation of our accumulated experience in chelation. Send for technical data and samples. Chemical counsel on request.



"Chemistry's most precise chemicals"
BERSWORTH CHEMICAL CO.
FRAMINGHAM, MASSACHUSETTS

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WEST COAST AGENTS Oklahoma City, Tulsa, Kansas City, Mo.
Braun-Knecht-Heimann Co. Van Waters & Rogers, Inc. Braun Corporation
San Francisco, California Seattle, Wash. & Portland, Ore. Los Angeles, California

When inquiring check CP 6883 on handy form, pgs. 2-3

MATERIALS

Shows correct handling of hydrogen peroxide

Safety factors relating to use of hydrogen peroxide are covered in bulletin. Accompanied by charts and graphs, text includes a theoretical study of the heat balance in hydrogen peroxide storage vessels as well as practical recommendations on handling and storage of the material.

Bul 54 is issued by Buffalo Electro-Chemical Co., Inc., Dept. CP, Station B, Buffalo 7, N. Y. When inquiring specify CP 6884 on handy form, pages 2 and 3.

Announce availability of two unsaturated secondary amines . . .

starting materials are soya oil and tallow

Now available are two secondary unsaturated amines produced from tallow and soya. Products, known as Armeen 2S and 2T, are reported to be first such types to be offered to industry.

Possible uses have not yet been fully explored, but potentialities are in corrosion inhibitors, lubricant additives, rubber processing, textile treating compounds, and emulsifiers.

Due to the unsaturation in both compounds, they are said to be more easily liquefied than the corresponding saturated secondary amine. They are also reported to show better solubility in organic solvents. Secondary amine content in both products is 85%. Primary amine content is 5%. Neutralization equivalent is between 520 and 540. Color of each is light tan. Other properties are shown below.

Armeen	2T	2S
Iodine value, min	35	60
Temp to liquefy, °C	50-55	45-50

Single drum quantities of either product are available for experimental testing.

(Armeens 2S and 2T are products of Chemical Division, Armour and Company, Dept. CP, 1355 West 31st Street, Chicago 9, Illinois . . . or for more information check CP 6885 on handy Reader Service slip located between pages 2 and 3.)

Quality
Fabrics

—FOR THE

Chemical INDUSTRY

"The Preferred Source of Supply"

"SAN JUAN" Cotton Duck
NUMBERED DUCK
IN ALL WIDTHS AND WEIGHTS

Filter Twills • Chain Cloths
Press Cloths • Enameling Duck
Selected Osnaburgs

Our technicians will gladly aid in creating industrial fabrics to your specification. We solicit your inquiries.



B. J. BARRY & CO.

INCORPORATED

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MILLS AT: Lincolnton, N. C. and Roanoke, Ala.

When inquiring check CP 6886 on handy form, pgs. 2-3

J. E. SIRRINE CO.
GREENVILLE • SOUTH CAROLINA

Engineers
ESTABLISHED 1902



PLANT DESIGN & SURVEYS • CHEMICAL • ELECTROCHEMICAL •
METALLURGICAL PRODUCTION • TRADE WASTE DISPOSAL •
WATER SUPPLY & TREATMENT • ANALYSES & REPORTS

When inquiring check CP 6887 on handy form, pgs. 2-3

CHEMICAL PROCESSING

Activator
cuts poly

Uses:
polymer

Features:
produced
41°F.

Description:
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check CP

Tear strength
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Uses:
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Activator for cold rubber cuts polymerization time

Uses: As an activator for GR-S cold rubber polymerization.

Features: Tests in polymerization recipes have produced cold rubber in less than 20 minutes at 41°F.

Description: Activator is phenylcyclohexane hydroperoxide. It is available in experimental quantities as 20% solution in phenylcyclohexane.

(Activator is a development of Phosphate Div., Monsanto Chemical Co., Dept. CP, 1700 S. Second St., St. Louis 4, Mo. . . . or for more information check CP 6888 on handy form, pages 2 and 3.)

Tear strength averages 190 psi — important feature of tough silicone rubber . . .

useful any place where high temperatures, pressures, or vacuum conditions exist

Uses: Suggested applications include aircraft, chemical processing equipment, and others where high temperature, pressure, or vacuum exist.

Features: Product has high tear strength (averaging 190 psi) and is oil-resistant.

Description: Material is a tough silicone rubber and is supplied in three grades: 15060, 15080, and 15081. All are available in molded form. Gaskets and "O" rings made from this rubber have proved satisfactory as seals for synthetic base oils at temperatures as high as 375°F.

They are said to have excellent resistance to both cold and heat and their flexibility is maintained over a range of minus 65°F to plus 550°F. Grade 15081 has low compression set properties.

(Super-tough silicone rubber is product of Plastics Department, Chemical Division, General Electric Company, Dept. CP, Pittsfield, Mass. . . . or for more information check CP 6889 on handy form, pages 2 and 3.)

Bulletin gives cold facts on refrigerator desiccants

Physical and chemical characteristics of refrigeration grade silic gel are outlined in 4-page bulletin. Manufacturer states product will reduce moisture level of Freon 12 to less than 10 ppm at temperatures as high as 160°F. Non-corrosive, non-dusting, and acid absorbing qualities of the desiccant are described.

Bul "PA 400" is available from Industrial Chemical Dept., Davison Chemical Corp., Dept. CP, 101 N. Charles St., Baltimore 3, Maryland . . . or for more information reader may simply check CP 6890 on handy Reader Service slip located between pages two and three.



HEYDEN SALICYLIC ACID and SALICYLATES

*Dependable Source . . .
Highest Quality . . .
All Grades . . .*

As a major producer of Salicylic Acid and Salicylates, Heyden can assure you of the quality, quantity and form that you need.

Whether your requirements demand U.S.P. grades for pharmaceutical manufacturing or Technical grades for chemical intermediates, call on Heyden for prompt and dependable service.

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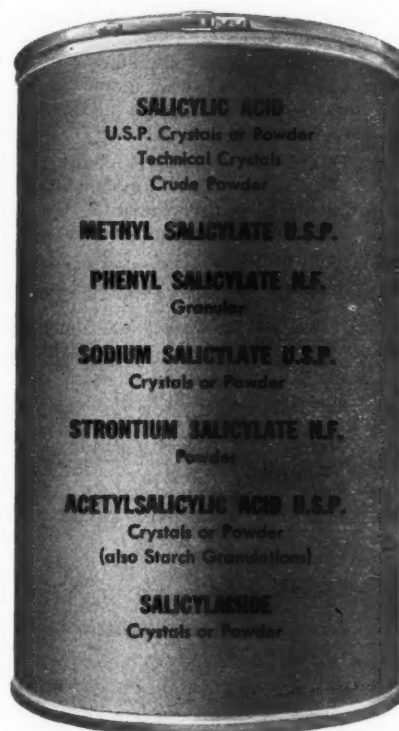
Shipped in fiber drums, 25 to 250 lbs. net.

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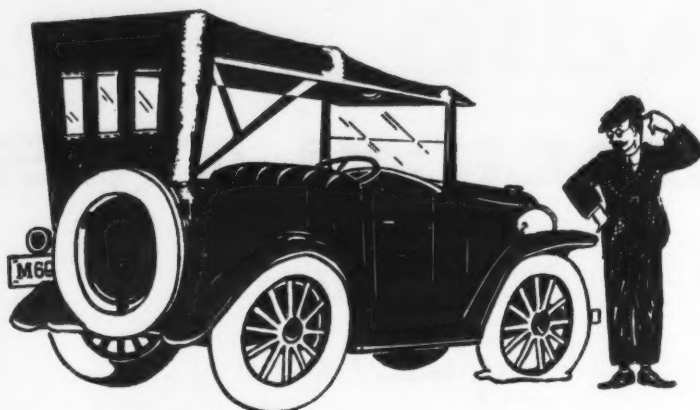
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When inquiring check CP 6891 on handy form, pgs. 2-3

REMEMBER WHEN... 200 MILES — 20 FLATS!



Tires are better today ... due in part to **MARASPERSE**

New materials and improved processes have enabled tire manufacturers to continuously better their products, year after year. Marathon's Marasperse have contributed to today's longer lasting tires... the addition of only small amounts of Marasperse to the carbon black slurries results in more efficient, more economical production of black masterbatch rubber. That's one of the reasons why tires today are safer, wear longer and cost less.

Marasperse are versatile dispersants used in a variety of applications:

1. To increase the solids content of slurries without increasing either the viscosity or the volume.
2. To change semi-solids into free-flowing liquids without adding water.
3. To make stable oil-in-water emulsions.

If you have a process, or a use involving one of your products, which requires water suspensions of insoluble materials, investigate the use of Marasperse.

Write for File No. A-112 for additional information on Marathon's low cost Marasperse. You'll receive interesting and informative technical data.

MARATHON Corporation
CHEMICAL DIVISION
ROTHSCHILD • WISCONSIN

When inquiring check CP 6892 on handy form, pgs. 2-3

MATERIALS

Vinyl dispersion resins subject of booklet

Typical uses, properties and methods of applying vinyl resin-base organosols, plastisols, and plastigels are presented in 8-page booklet.

Booklet VE is issued by Bakelite Co., a Div. of Union Carbide and Carbon Corp., Dept. CP, 300 Madison Ave., New York 17, N. Y. When inquiring specify CP 6893 on handy form, pages 2 and 3.

Synthetic rubber is flowable...

plasticizes resin formulations

Uses: Plasticizer for resin formulations, and crude or synthetic rubber compounds. Interesting possibilities include conductive rubbers and adhesive formulations.

Description: DPR Synthetic N-27 is a liquid copolymer of butadiene and acrylonitrile. General physical characteristics are listed below:

Color	Light amber
Sp gr (25°C)	0.97
Viscosity (25°C, cps)	13 x 10 ⁴
Iodine number	140

(DPR Synthetic N-27 is a development of DPR, Inc., Subsidiary of H. V. Hardman Co., Dept. CP, 571 Cortlandt St., Belleville 9, N. J. ... or for more information check CP 6894 on handy form, pages 2 and 3.)

Chemicals from allethrin made available...

show possibilities as intermediates

Five chemicals, derived from the production of allethrin, are offered. Possible use in synthesis of pharmaceuticals, perfumes, insecticides, and fine chemicals is suggested.

Allyl acetone — undergoes polymerization reactions; has reactive double bond, ketone and terminal methyl group.

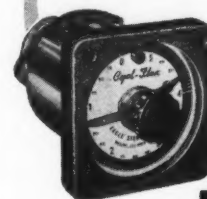
2, 5-Dimethylhexane-2, 5-diol — on treatment with dehydrating agents, ammonia, or amines, it

... look to
Timing
... when
profits are
threatened

If your
employees
and machines
are already
working at
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Automatic Timing may be your answer to greater profit. Electrical controls held constant by an automatic timer, will produce a uniform product, stop rejects, and increase production. Let experienced engineers suggest the right timer for your individual process.



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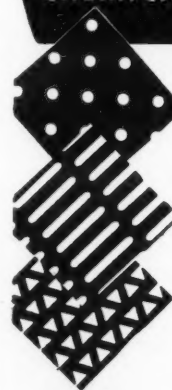
Industrial Timers
by **EAGLE**

EAGLE SIGNAL
CORPORATION
Moline, Illinois

When inquiring check CP 6895 on handy form, pgs. 2-3

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CHEMICAL PROCESS SCREENS?**



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- No Order Too Large or Too Small

H & K has made a science of meeting the exacting specifications of the chemical industry for screens used under heat, corrosive, acid, alkali and other similar applications. H & K screens are available with hole tolerances as close as $\pm .0005$ ". Stainless steel is a specialty. Choice of patterns is practically unlimited. Accuracy of hole size and spacing, flatness and proper selection of available materials are all conscientiously controlled. Rough edges and burrs are held to a very minimum, assuring clean, efficient screens.

Catalog No. 62
tells the "hole" story
— write for your copy.

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PERFORATING CO.

3636 Fillmore St., Chicago 44, Ill.
114 Liberty St., New York 6, N. Y.

When inquiring check CP 6896 on handy form, pgs. 2-3

CHEMICAL PROCESSING

undergoes cyclization; can react at one or both hydroxyl groups to produce esters and ethers.

2, 5-Dimethyl-2, 4-hexadiene — for condensations, including Diels-Alder reaction.

Ethyl- α -allylacetoacetate — reacts with hydrazine hydrate, forming an allyl-substituted methyl pyrazolone; and with phenols, forming allyl-substituted methyl umbelliferones.

Ethyl diazoacetate — by addition to aliphatic as well as aromatic double bonds, can form cyclopropane derivatives.

(Products are a development of U. S. Industrial Chemicals Co., Division of National Distillers Products Corp., Dept. CP, 120 Broadway, New York 5, N. Y. ... or for more information check CP 6897, pages 2 and 3.)

Odorless paint problem reported solved with mono-oleate . . .

alkyds and solvents kept stable and in solution

Use of a grade of glyceryl mono-oleate, known as S1096R, is said to have solved the formulation problem of odorless oil base paint producers. The difficulty has been to obtain sufficient solubility of alkyd resins in odorless solvent without loss of covering power and stability.

Glyceryl mono-oleate is reported to keep the alkyds stable and in solution. Required amount is from 5-15% by weight, based on vehicle solids. Manufacturer states that there is no reduction in holdout, adhesion, durability, or brushability. Since product is non-volatile, it becomes an integral part of the vehicle solids and permits a reduction of an equal amount of alkyd.

(Glyceryl mono-oleate, S1096R, is product of Glyco Products, Inc., Dept. CP, 26 Court Street, Brooklyn 2, N. Y. . . . check CP 6898, pages 2 and 3.)

For more information on product at right, specify CP 6899 . . . see information request blank between pages 2 - 3.

Cyanamid's

ACRYLO-NEWS

No. 1 of a series of advertisements

AERO* Acrylonitrile, though a highly stable chemical, is the most reactive of the vinyl monomers. It is so versatile that it can be used either as an intermediate in the preparation of dyes, pharmaceuticals, insecticides and other useful products, or by direct application in the broad fields of rubber,

plastics and textiles. Its polymers and copolymers can be formulated to add many desirable properties to today's products and to create interesting new products. The following items and abstracts, gathered from many sources, indicate a few facets of current research with this versatile monomer.

★ ★ ★ ★ ★

CYANOETHYLATION OF COTTON with acrylonitrile reveals a new family of fibers that retains the appearance and feel of cotton while gaining increased resistance to micro-organism attack, unusual receptivity to all classes of dyes, and greater strength retention on exposure to heat.

STABILIZED VISCOSITY OF LUBRICATING OILS over a wide range of temperatures has resulted from addition of an oil-soluble copolymer consisting of acrylonitrile and an alkyl ester. The additive appears to be compatible with other additives, such as antioxidants.

GRAIN SIZE IN LATEX COAGULATION CAN BE CONTROLLED during copolymerization of acrylonitrile with vinyl chloride by new methods. Uniform grain size minimizes discontinuities ("fish-eyes") in the dried resin for such end uses as films, sheeting, artificial leathers, etc.

NEW STABILIZERS FOR USE IN COPOLYMERS OF ACRYLONITRILE are available. Adding condensation products of polyhydric phenols with diolefins has proved effective in stabilizing emulsions of butadiene or isoprene with acrylonitrile where deterioration caused by presence of oxygen is a factor.

SOFTENING OF SYNTHETIC FIBERS DURING DYEING has been avoided by polymerizing acrylonitrile in the presence of preformed polymers which have not been separated from their polymerization medium prior to the addition of monomeric acrylonitrile.

(Some or all of the above items are covered by U. S. or foreign patents)

★ ★ ★ ★ ★

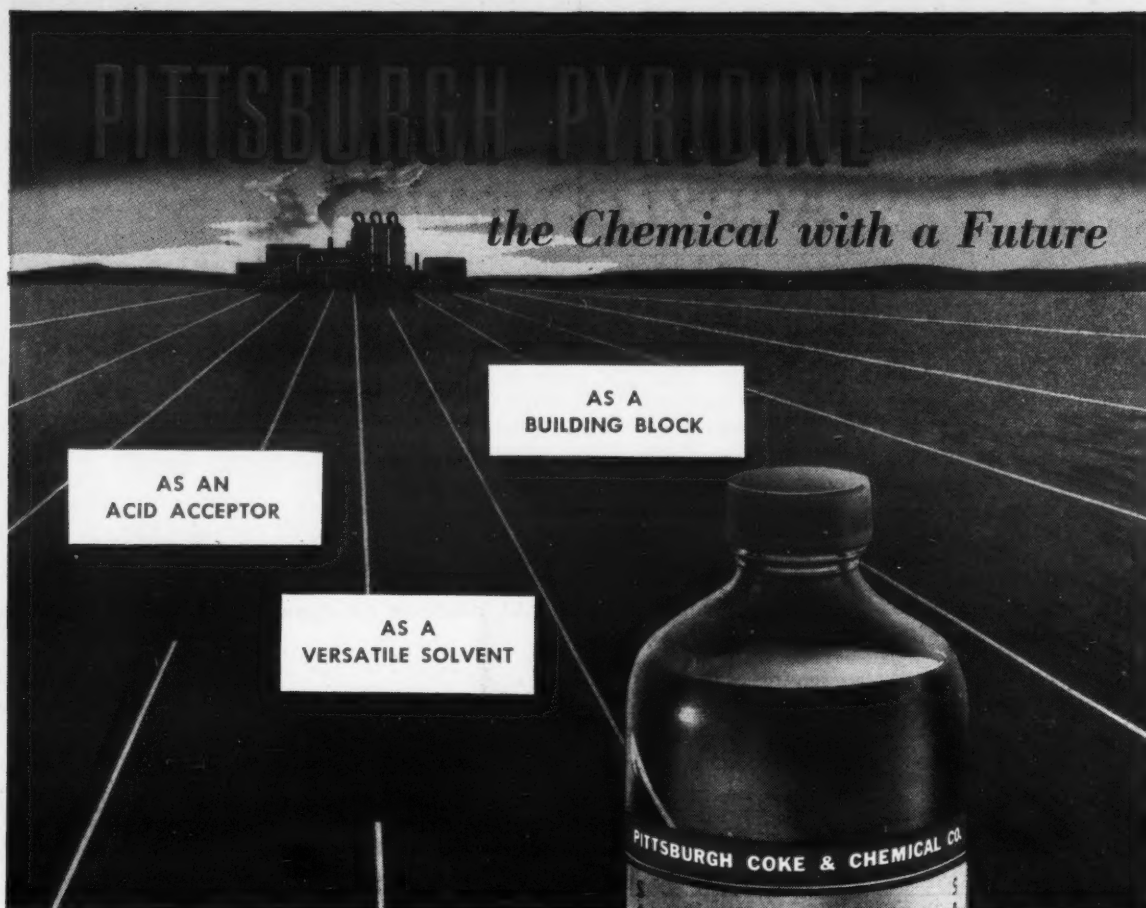
Further information on any of the items listed above will be supplied on request. Should you wish a more complete bibliography of current literature and new developments concerning acrylonitrile, we shall be glad to place your name on our mailing list.

As the pioneer producer of this exciting vinyl monomer, American Cyanamid has expanded its production facilities to assure users adequate supplies at low price. Write for technical assistance in your acrylonitrile research.

*Trade-mark

AMERICAN Cyanamid COMPANY

PETROCHEMICALS DEPARTMENT
30 Rockefeller Plaza, New York 20, N. Y.



How can you use it to improve your product or process?

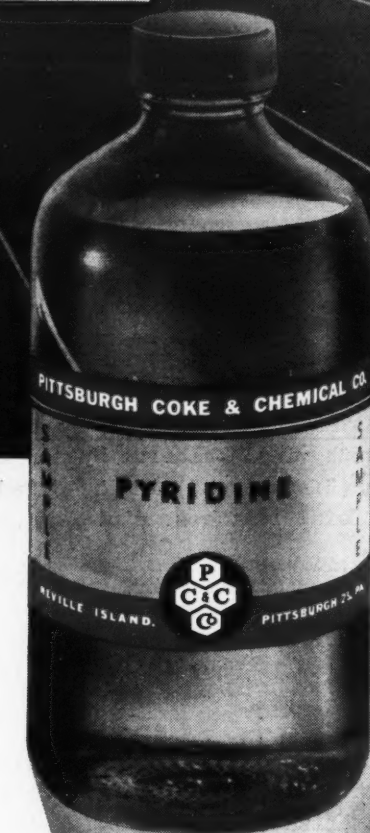
Did you know that Pittsburgh Pyridine is an extremely valuable material for improving your pharmaceutical products and processes? Here's how it can work for you:

As a Building Block: Pittsburgh Pyridine's derivatives exhibit unusual biological activity, surface activity, and buffering activity as well as special adhesion and solubility characteristics.

As an Acid Acceptor: Pittsburgh Pyridine possesses remarkable acid accepting properties, but it will not affect many fine chemicals that might be attacked by caustic neutralizers.

As a Versatile Solvent: Soluble in both water and organic materials, Pittsburgh Pyridine produces cleaner separations and purer end products.

Pittsburgh Pyridine was used to produce some of the first sulfa drugs and vitamins. And, after a period of scarcity, it is again available in unrestricted quantities, largely because Pittsburgh has doubled its production. Pyridine is a material worth studying in your laboratory. Additional data and samples will be sent upon request.



COAL CHEMICALS • AGRICULTURAL CHEMICALS • FINE CHEMICALS • PROTECTIVE COATINGS • PLASTICIZERS • ACTIVATED CARBON • COKE • CEMENT • PIG IRON

When inquiring check CP 6900 on handy form, pgs. 2-3

MATERIALS

Plasticizer for polyvinyl chloride has low initial viscosity, low volatility . . .

storage life of plastisols prolonged by slow viscosity buildup

Uses: As a general purpose primary plasticizer for polyvinyl chloride in applications where low volatility is desired.

Features: Volatility of plasticizer when compounded is less than one-half that of di-2-ethylhexyl phthalate similarly compounded. This is of interest in electrical applications where permanence is important.

Low initial viscosity and slow viscosity buildup means increased storage life for PVC plastisols. Slightly higher calendaring, extruding, and blending temp may be required to obtain a solvating action comparable to DOP.

Description: Di-isodecyl phthalate (DIDP) is a clear, mobile, oily liquid having a mild characteristic odor. Physical properties are given in table.

Color (APHA)	Approx. 75
Sp gr (25°/25°C)	0.966
Refractive index (25°C)	1.483
Acid number (meq./100gm)	0.15

DIDP is similar to DOP in electrical properties as measured by long time water immersion tests @ 50°C.

(Plasticizer is a product of Organic Chemicals Div., Monsanto Chemical Co., Dept. CP, 1700 S. Second St., St. Louis 4, Mo. . . or for more information concerning manufacturer's product, reader may simply check CP 6901 on handy form located between pages two and three.)

High strength-to-weight ratio, acid resistance are features of polyester resin . . .

when reinforced with glass fibers, it's stronger than steel, aluminum, or other common metals

Uses: Material is expected to find application with fabricators of exhaust ducting for chemical fumes, chemical storage and transportation tanks, washer tubs, and other items where corrosion resistance is important.

Features: When reinforced with glass fibers, products have high strength, low weight, resistance to acids and solvents, and high impact resistance.

Description: AR493 is a polyester resin. Pound for pound, the reinforced polyester is stronger than steel, aluminum, and other common metals.

AR493 glass cloth laminates withstand maximum continuous operating temperatures of 150°C, and intermittent temperatures of 250°C. High heat resistance also suggests use in electrical applications.

(Polyester resin AR493 is product of Chemical Division, General Electric Company, Dept. CP, Pittsfield, Mass. . . or for more information check CP 6902 on handy Reader Service slip located between pages two and three.)

U.S.I. CHEMICAL NEWS

★ A Series for Chemists and Executives of the Solvents and Chemical Consuming Industries ★

Pests Do Not Develop High Resistance To Pyrethrins, Allethrin

A recent report noted that the high resistance pests develop to some insecticides disappears when the insecticide is no longer used. However, about 12 generations of non-exposure to the insecticide must pass for pests to lose their resistance. Even then, it was indicated, the number of generations of effectiveness is likely to be less than before.

Pyrethrins and allethrin were named as insecticides against which pests have not been able to develop much resistance. In October 1952, U.S.I. completed the nation's first full-scale plant for the commercial synthesis of allethrin. U.S.I. combinations of pyrethrins and piperonyl butoxide are well known under the trade name Pyreneone. Thoroughly tested formulations containing allethrin and Pyreneone, as well as the chemicals themselves, are available from U.S.I. to industry.

New Electronic Camera Takes High-Speed Pictures

A new camera reportedly can take a picture in only one tenth of one millionth of one second. Its speed is said to be so great that it can photographically chop a beam of light into separate segments. The shutter is described as a Kerr cell consisting of two screens of polarized material separated by a solution of nitrobenzene. An electronic device applies a high electrical potential across the cell. The shutter holds out light until the electrical charge realigns the molecules of nitrobenzene, thus permitting light to pass through the cell onto the film.

According to the manufacturer there are no moving parts and the electrical power needed to take the picture is no greater than that required to light a Christmas tree bulb. The new camera promises to have a number of uses in the study of industrial processes, such as the observation of jet engine combustion.

Continuous Separation In New-Type Dry Classifier

A new type of dry classifier which continuously separates coarse and fine air-borne particles has been announced. According to the manufacturer it can be used in a closed circuit with a pulverizing mill, or as a self-contained sizing unit for any moving stream of air-solids mixture.

The classifier is described as basically an inverted, truncated-cone shell with a motor-driven, bladed rotor revolving on a vertical center axis inside the outer shell. The raw mixture of coarse and fine air-borne material is fed in from the bottom of the cone, passes upward in the annular space occupied by the whirling blades, describes a circular motion above the rotor, and discharges through a central opening in the top. Oversize particles are removed by the impact of the blades or drop out in the eddy-current above the rotor.

Cotton Growers Cut Cost Of Weeding as Much as 50% With CIPC Formulations

Show Excellent Promise for Soybeans, Legumes, Vegetables and Other Crops

Striking accounts of the savings in labor costs through the use of CIPC herbicides have been published recently. For example, one cotton grower's

hoeing costs were reduced from approximately \$12.00 to \$0.50 an acre in an area treated with 3 pounds of CIPC per acre. Chemical weed control costs under these conditions are reasonably constant at \$5.00 to \$6.00 an acre, indicating a saving of about \$6.00 an acre.

Leading Ag Colleges Find Riboflavin Levels Too Low

Reports from leading agricultural colleges indicate that previously recommended riboflavin levels in animal feeds are too low for optimum growth and feed efficiency. Many experiment station authorities are increasing their recommendations for riboflavin additions to several times more than those of the National Research Council. Levels of supplemental riboflavin as high as 6 to 9 grams per ton of finished feed are often recommended.

U.S.I. offers a wide choice of riboflavin products derived from natural fermentation sources to meet the needs of the feed industry.

Antifoam Spray Is Aerosol-Packaged

Designed for foam control in the laboratory, pilot plant or other small scale processing, a new antifoam spray is said to combine rapid speed with maximum effectiveness. The spray is an aerosol-packaged dispersion of silicone compound in freon. It blankets foam with a cloud of finely divided particles of silicone. In most cases, the manufacturer states, no trace of silicone can be detected in the finished batch after defoaming. Effective concentrations of silicone are reported usually to range from 0.01 to 1.0 part per million, which is less than the 10 p.p.m. the Food and Drug Administration allows. The freon propellant vaporizes upon discharge.

Masking Tape Withstands Temperatures up to 375° F.

Masking tape designed for use in oven temperatures up to 325°F. is now available in 1/4 to 36-inch widths, according to a recent report. Laboratory and field tests indicate that the tape can be used in temperatures as high as 375°F. The new tape is said to remove cleanly from treated metal surfaces, leaving no adhesive deposit and to be capable of withstanding much longer bake cycles.

It is thought that aircraft assembly, engine and parts manufacturers will be able to use the new tape for high-heat masking on treated metals such as anodized aluminum, pickled steel and dichromated magnesium. Electronics manufacturers, among others in the metal finishing trade, should have need for the pressure-sensitive masking tape.



Hoeing costs to control weeds are about \$12.00 an acre in cotton fields like this.

According to the National Cotton Council, a substantial part of the cost of producing cotton is that of weed control—which previously has been done largely by hand hoeing. Today, however, the average cotton grower is faced with a steadily shrinking labor force and the necessity of paying higher wages. His labor costs are unpredictable, and any means of reducing them and saving money is an economic necessity. If for no other reason than this, more and more cotton growers are using CIPC weed control formulations.

CIPC formulations have been reported equal or superior to the best known commercial herbicides for cotton weed control. Two things assure their increasing use in this field: the fact that CIPC gives highly satisfactory weed control, and repeated demonstrations showing that it is the safest compound available.

Many Promising Uses

CIPC formulations are usually applied to the soil after planting but before the emergence of the crop plant. Although CIPC first

MORE

U.S.I. CHEMICAL NEWS

CONTINUED

CIPC Cuts Weeding Costs

gained recognition for the control of weeds in cotton growing, it has excellent potentialities for the control of weeds in soybeans, sugar beets, certain legumes, vegetable crops,



Weed control results after application of CIPC at the rate of two pounds per acre. No manual weeding has been required. Plants are, bottom to top, green beans, corn, peanuts, soybeans and cotton.

strawberries, ornamentals and nursery stock. CIPC also has been used to control weedy grasses in fence rows, along roadways, in fire lanes, in perennial grass seed crops and in other miscellaneous crops.

Ten to Twenty Year Life For New Storage Battery

A new type of storage battery with a life expectancy of ten to twenty years has been announced as available to manufacturers for testing and appraisal. It is claimed that while the initial cost of the battery is two to five times as much as the conventional type, it lasts so much longer that the actual cost is perhaps half as much.

The new battery uses nickel cadmium cells of a special sintered plate type in place of lead. Reported to be unaffected by shock and vibration, and to eliminate the worry of overcharging, reverse charging or short circuiting, it contains an alkaline solution instead of acid and will operate at temperatures as low as 65 degrees below zero or as high as 165 degrees Fahrenheit.

It is "extremely effective" in keeping stored potatoes from sprouting, and recently published results indicate CIPC shows unusual promise for fruit thinning of peaches. There is every indication that the already large number of uses for CIPC formulations will expand in the future.

U.S.I. produces CIPC as a 70 per cent solution concentrate in xylene, from which formulators usually prepare ready-to-use herbicides containing 4 pounds of CIPC per gallon by adding emulsifiers and additional solvent.

The amount of CIPC used per acre will vary from 1 to 8 pounds. This depends on the crop and type of weed involved and on the type of soil. In general, as the soil changes from a light sandy loam to a heavy loam the amount of CIPC required for weed control will increase. CIPC is used under a wide variety of climatic and agronomic conditions, and there are, of course, variations in performance. Therefore, local authorities should be consulted for recommendations on its use.

Technical data on CIPC and IPC, another U.S.I. weed controller, are available upon request. The latest CIPC bulletin lists more than 70 helpful references.

TECHNICAL DEVELOPMENTS

Information about manufacturers of these items may be obtained by writing U.S.I.

Stopcock grease for high vacuum use is available in three grades. The grease reportedly provides proper viscosity for temperatures from 60° to 110° F., shows very low hydrocarbon absorption, and permits pumpdown in vacuum systems. (No. 1010)

Fire-resistant translucent fiberglass panels designed for critical fire areas are claimed to offer adequate color stability. Uses include structural and decorative applications. (No. 1011)

A new flash-point tester is electrically-heated. A 150-watt heater and variable-power transformer with reproducible setting are reported to supply the close heat control needed by the ASTM D-56 test. (No. 1012)

A new paper making process uses 40% of cheap poplar wood, according to a recent report. Previously only 10 per cent of poplar has been successfully used, it was stated. In addition to special pulp grinding methods, a new chemical process was used. (No. 1013)

A new coal additive, described as simple to use, is said to reduce heating costs, do away with hard clinkers, eliminate odors and soot, and enable a banked fire to start up instantly. (No. 1014)

A copper plating process reportedly produces mirror brightness, avoids pitting of the cathode and holds brightener breakdown to a minimum. According to the developers of the process, it increases plating production up to 60%. (No. 1015)

For measuring fast pressure changes at temperatures as high as 5000° F., a new pressure pick-up is little larger than a cigarette. The instrument component is said to dispose of heat at a rate of 11 BTU's a second over each square inch of its surface. (No. 1016)

A new detergent for dry cleaning systems is said to increase the removal of water-soluble stains and to eliminate shrinkage, breaking and water stain. The detergent permits the use of larger amounts of moisture. (No. 1017)

Organosodium compounds and their derivatives can now be made economically, using finely dispersed sodium. A new booklet describes easy preparation methods using simple mixing procedures. Yields are said to be high, and reaction rates easy to control. (No. 1018)

A new microfilm has been announced as offering five different reduction ratios and a choice of either 16 mm. or 35 mm. film. According to the manufacturer it provides a choice of three accepted methods of microfilming: standard, duo and duplex. (No. 1019)

PRODUCTS OF U.S.I.

ALCOHOLS

Amyl Alcohol (Isoamyl Alcohol)
Butanol (Normal-Butyl Alcohol)
Fusel Oil — Refined
Propanol (Normal-Propyl Alcohol)

Ethanol (Ethyl Alcohol)

Specialty Denatured—all regular and anhydrous formulas
Completely Denatured—all regular and anhydrous formulas
Pure—190 proof U.S.P., Absolute—200 Proof
Solox®—proprietary solvent—regular and anhydrous

ANTI-FREEZE

Super Pyro® Anti-Freeze
U.S.I. Permanent Anti-Freeze

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Ethyl Ether, U.S.P.
Ethyl Ether, Absolute—A.C.S.

ACETONE—A.C.S.

ANSOLS

Ansol® M
Ansol® PR

ACETIC ESTERS

Amyl Acetate—Commercial and High Test
Butyl Acetate
Ethyl Acetate—all grades
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OXALIC ESTERS

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PHTHALIC ESTERS

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Dibutyl Phthalate
Diethyl Phthalate

OTHER ESTERS

Dialol®
Diethyl Carbonate
Ethyl Chloroformate

RESINS (Synthetic and Natural)

Arochem®—modified types
Arafens®—pure phenolics
Aroflat®—for special flat finishes
Aroflint®—room temperature curing phenolic
Aroplaz®—alkyds and allied materials
Arapol®—copolymer modified alkyds
Ester Gums—all types
Natural Resins—all standard grades

INSECTICIDE MATERIALS

Alliethrin
CPR Concentrates: Liquid & Dust
Piperonyl Butoxide
Piperonyl Cyclohexane
Pyrethron® Concentrates: Liquid & Dust
Pyrethrum Products: Liquid and Dust
Rotenone Products: Liquid and Dust

INSECTIFUGE MATERIALS

Indalone®
Triple-Mix Repellents

INTERMEDIATES

Acetoacetanilide
Acetoacet-ortho-chloroanilide
Acetoacet-ortho-toluidide
Acetoacet-para-chloroanilide
Ethyl Acetoacetate
Ethyl Benzoylacetate
Ethyl Sodium Oxalacetate

FEED PRODUCTS

Calcium Pantothenate (Feed Grade)
Choline Chloride
Curbay B-G* 80
DL-Methionine (Feed Grade)
Niacin, U.S.P.
Riboflavin Concentrates
Special Liquid Curbay®
U.S.I. Vitamin B₁₂ and Antibiotic Feed Supplements
Vacatone® 40

OTHER PRODUCTS

Acetaldehyde
Caustic Soda
Ethylene
IPC (Isopropyl-N-Phenyl Carbamate)
CIPC
Liquid Chlorine
Metallic Sodium
Methionine (Pharm.)
N-Acetyl DL-Methionine
Nitrocellulose Soles
Propionaldehyde
Propionic Acid
Sulfuric Acid
Urethan, U.S.P.
*Reg. U.S. Pat. Off.

U.S.I. INDUSTRIAL CHEMICALS CO.

Division of National Distillers Products Corporation

120 BROADWAY, NEW YORK 5, N. Y.

BRANCHES IN ALL PRINCIPAL CITIES

MATERIALS

Trace iron controlled by chelating agent . . .

applicable to paper, textiles, soaps, other wet processes

Uses: Product should find application in paper, textiles, soaps, and other materials involving wet processing, where trace iron causes contamination.

Features: Versen-OL controls trivalent iron over wide pH range by chelating action. Formation of ferric chelates prevents hydrolytic decomposition, even in strong alkaline solutions. Any Versen-OL remaining inactivates other heavy metal or alkaline earth ions until exhausted.

Description: Material is the trisodium salt of N-hydroxyethyl-ethylene diamine triacetic acid. It is reported to be extremely soluble in water and highly stable throughout the pH range.

(Versen-OL is product of The Bersworth Chemical Company, Dept. CP, 875 Waverly Street, Framingham, Mass. . . . or for more information check CP 6903 on handy form located between pages 2 and 3.)

Application Index shows correct silicone to use

Guide gives 4-page comprehensive listing of silicone products. Products are described largely in terms of operating and service characteristics. Application index includes section on silicone fluids.

Bul "Reference Guide to Silicone Products" is issued by Dow Corning Corp., Dept. CP, Midland, Mich. When inquiring specify CP 6903A on handy form, pages 2 and 3.

For more information on product at left, specify CP 6904 . . . see information request blank between pages 2 - 3.

For more information on product at right, specify CP 6905 . . . see information request blank between pages 2 - 3.

Proved through the years

Time is the test of dependability. Behind Nialk Chemicals are more than fifty years of experience in meeting strict specifications.

a typical example...

NIALK CAUSTIC POTASH: Railroad signals and navigation lights must give instant, peak performance in all kinds of weather. NIALK Caustic Potash sees that they do. It "weatherproofs" electric cells, assures dependable current even at sub-zero temperatures.

The quality of this and other NIALK chemicals—today as in the past—is the result of broad research, strict quality control and a knowledge of the needs of industry.

NIAGARA ALKALI COMPANY

60 East 42nd Street, New York 17, New York

Nialk

LIQUID CHLORINE
CAUSTIC POTASH
CARBONATE OF POTASH
PARADICHLOROBENZENE
CAUSTIC SODA
TRICHLOROethylene

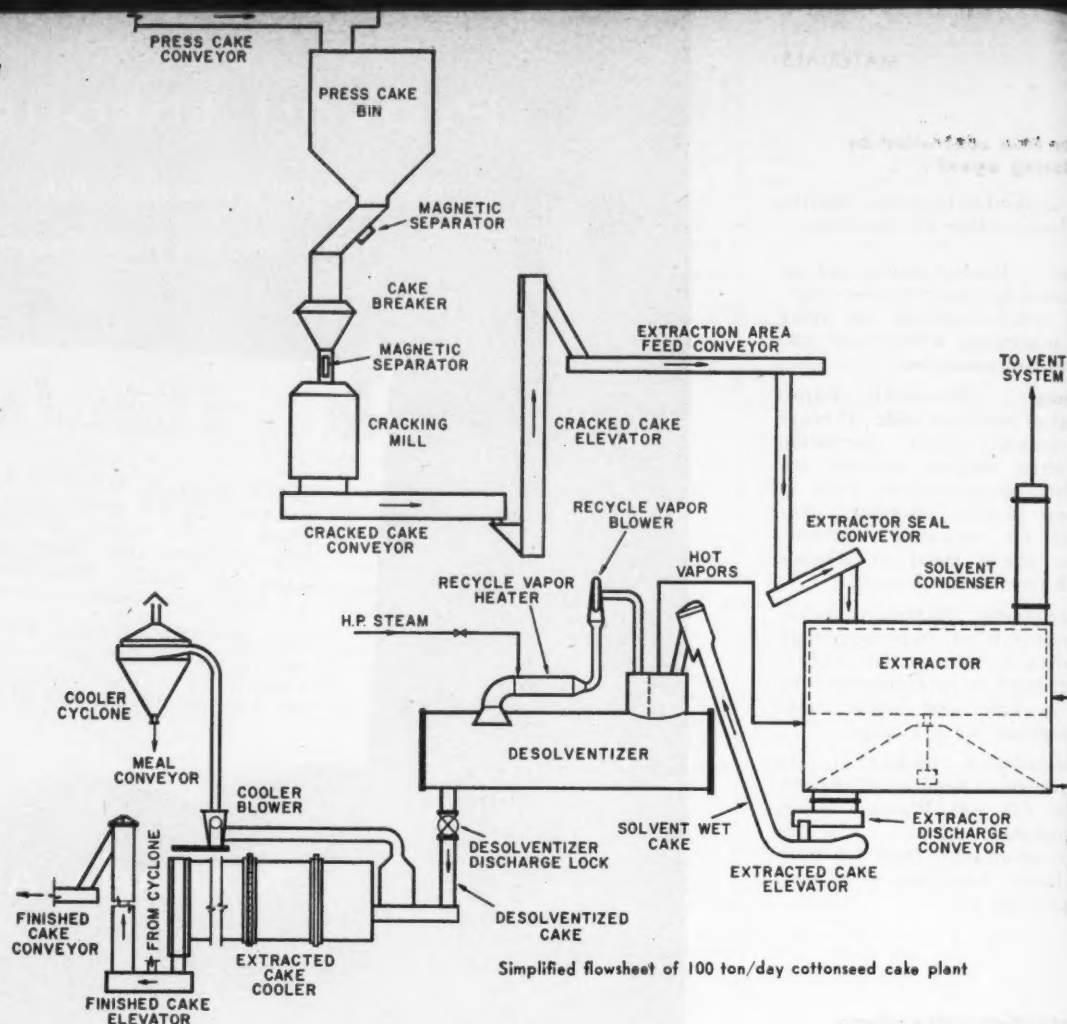
NIAGATHAL (TETRACHLORO PHTHALIC ANHYDRIDE)



ideas

Premium oil and low-gossypol,
low-oil meal assured by

prepress extraction of cottonseed



Granular type meal from process is light in color,
practically non-dusting, and pelletizes easily

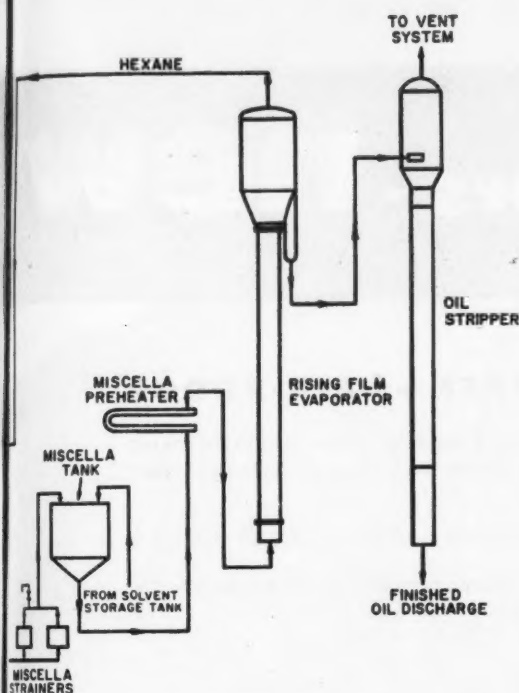


Cottonseed cake plant at Lubbock Cotton Oil Co. Prepressed cake is brought over to the plant by overhead conveyor. Cake breaker and granulator are in masonry building in front

Primary aim in cottonseed oil extraction is to get as much oil as possible out of the meat — and still operate practically. Oil yield can mean the difference between financially successful and unsuccessful operation. That's one reason why "prepress extraction" (mechanical pressing followed by solvent extraction) is becoming more popular. Extracted cake, or meal, has average residual oil content less than 0.5%. This means as much as 40 to 45 lb more oil for every ton of seed processed.

There are other advantages. Gossypol content of extracted meal from such an operation is around 0.05 or less. Meal is a canary yellow color, granular, nearly dust-free, and can be pelletized readily for range feeding. Oil is high quality, refines to a light color, and has excellent bleaching qualities. The combined process is simpler to operate because control is not critical.

Lubbock Cotton Oil Company has been operating



with prepress extraction since the spring of 1952. The mill has a design capacity of 200 tons of seed per day, but is actually running 40% above this. Typical data from plant are in table below.

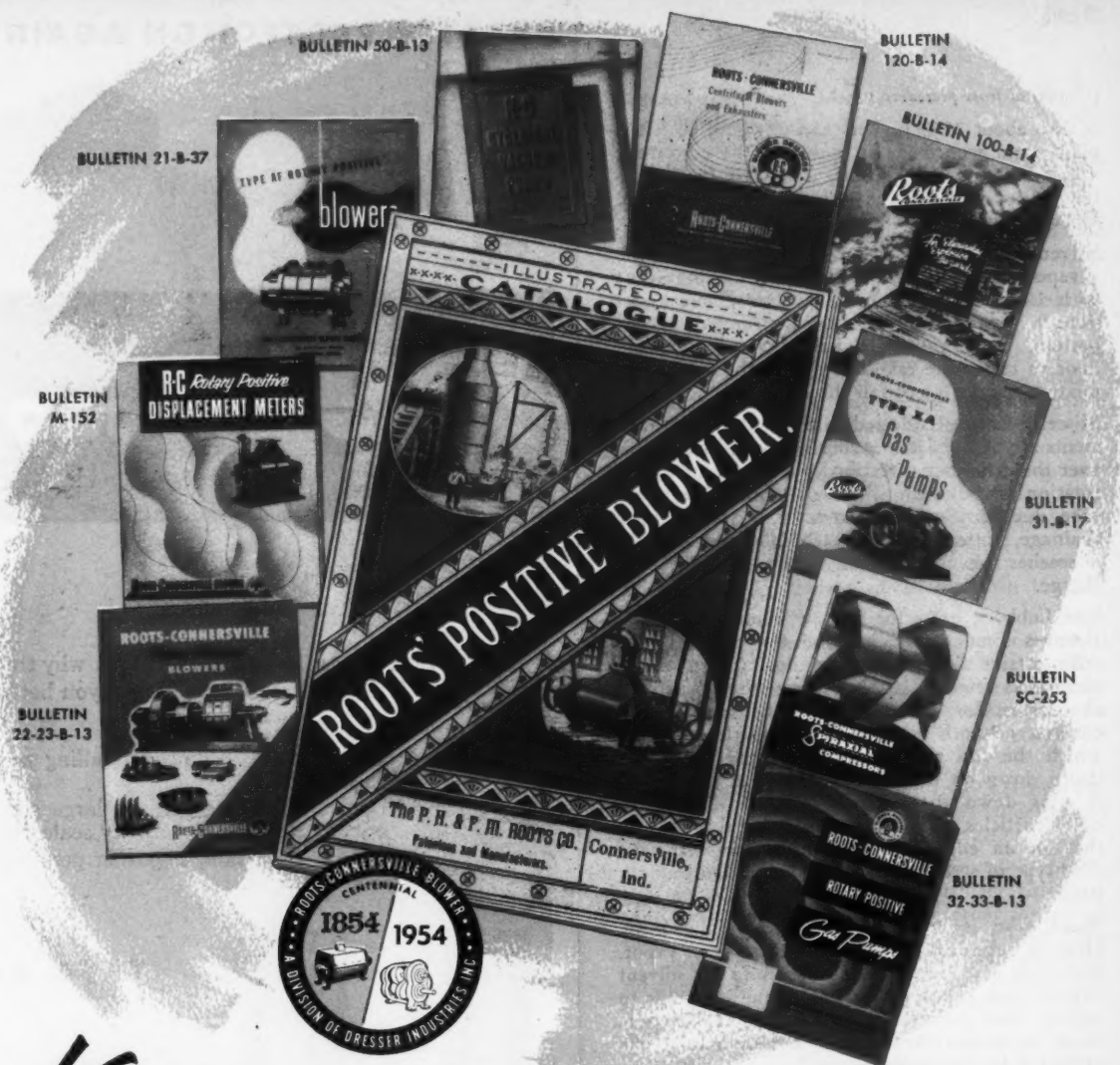
Simplified flowsheet shows only the solvent extraction part of the process. Delinting, dehulling, and other preparation for pressing is according to customary practice. However, less pressure is applied while pressing so that the press cake is left with as high as 7 to 8% oil. Press throughput

(Continued on next page)

Solvent Extraction of Press Cake at Lubbock Cotton Oil Co.

Cake plant design capacity (7-8% oil content), tons/day	100*
Solvent/cake ratio, lb/lb	0.85-1.0
Hexane temperature, °F	150
Rotational speed of Rotocel, min/rev	70
Percent oil in full miscella	19-25
Percent solvent in extracted cake to desolventizer	30
Percent residual oil in cake	less than 0.5
Percent moisture and volatiles in oil	less than 0.2
Solvent in meal	too low to be measured
Solvent loss, lb/ton of cake processed	less than 18

*Actually running at 140 tons/day.



Keeping pace with industry for 100 years

This early "Roots" catalog, published in 1879, offered only Rotary Positive Blowers. That was our exclusive business at that time—25 years after the invention of the rotary positive principle by Francis M. Roots.

Today, because of the greatly increased use of gas and air for industrial purposes, it takes a great many bulletins and booklets to describe our expanded line of products. As new ideas, new developments are utilized in industrial processing, Roots-Connorsville keeps pace with new equipment to handle gas and air most effectively and

economically. And that is still our only business.

Into these bulletins, any of which are yours for the asking, are condensed our 100 years of experience in building such equipment, from the first Rotary Positive Blower in 1854 to our latest 1953 development, the Spiraxial Compressor. They describe R-C products which are up-to-date in design and construction, to match specific needs of industry.

We suggest that when your business has a job of handling gas or air, you consult the exclusive specialists for 100 years.

Reg. U.S. Pat. Off.



ROOTS-CONNORSVILLE BLOWER

A DIVISION OF DRESSER INDUSTRIES, INC.
354 Richland Ave. • Connorsville, Indiana

When inquiring check CP 6907 on handy form, pgs. 2-3

(Continued from preceding page)

is thus about 25% higher than it would be if the oil content were brought down to the customary 4%. The cracked granular cake fed to the extractor lies mostly in the 20-mesh size range; there are virtually no fines.

Solvent extractor used at Lubbock is the Rotocel, a vapor-tight unit in which a slow-moving rotor with 18 sector-shaped cells revolves above a stationary, inverted cone-shaped, compartmented bottom. Each rotor cell has a screened bottom door to retain the cake but permit the solvent-oil mixture (miscella) to fall through.

Miscella streams collected in the bottom compartments are pumped continuously through manifolds over the cake in a direction countercurrent to the rotation of the rotor. Fresh solvent is sprayed on cake due to leave the extractor. After proper drainage, bottom door of each cell falls open, as it reaches the proper point, and spent flakes discharge.

The Lubbock extractor has an innovation which removes some of the load on the external miscella strainers so that they don't have to be cleaned as often . . . only during scheduled plant shutdowns, for example. A tent-shaped screen-covered network is over the compartment from which the full miscella is discharged. Miscella drops down on it from above and is strained as it runs down the sloping sides of the screen. Solid particles, with some liquid overrun, fall off the bottom edges into adjoining compartments. This type of screen design has been found to clean itself.

Spent cake is desolventized in a single drum. Heat is supplied by superheated solvent vapor. Note that heat is conserved by sending hot solvent vapors from the desolventizer to the extractor to supply heat during extraction. Solvent vapors from the evaporator are also sent directly to the extractor for the same reason.

Labor requirements for cake treatment plant, including supervisory and maintenance, are approximately 32 manhours per day for preparation and extraction (24-hr operation). Electrical power runs about 120 kw, steam requirements average 2700 lb per hour for preparation and extraction, and makeup water is close to 3.5 gpm.

(Press cake solvent extraction plant was designed by Chemical Plants Division, Blaw-Knox Company, Dept. CP, 180 N. Wabash, Chicago, Ill. . . . or for more information check CP 6908 on handy form, pages 2 and 3.)

Processing & Engineering Data Section starts on page 188 this month

GREATER PROTECTION AGAINST FOREIGN MATTER—LONG

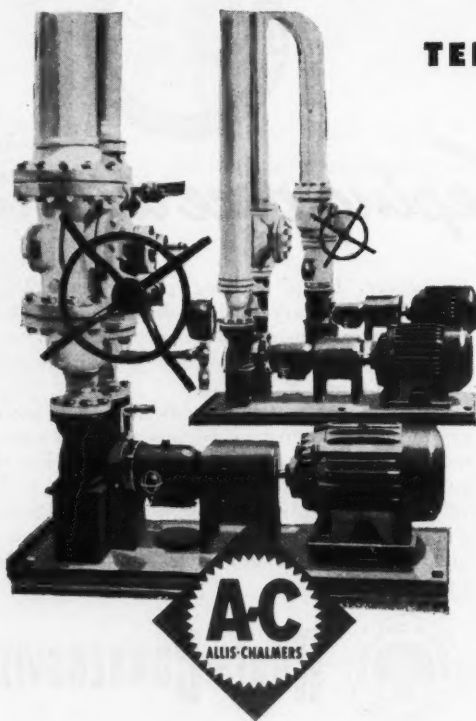
LIFE

new motors - new

OPEN—DRIP-PROOF

Here are a few of the reasons why the new Allis-Chalmers open—drip-proof motor in NEMA rerate sizes will give you better performance and lower maintenance costs in general-purpose applications.

- Better protection against falling water and debris because cooling air inlets are on bottom.
- Long bearing life because large grease chambers provide plenty of reserve lubricant and are thoroughly sealed against foreign matter.
- Quieter operation, smoother performance.



TEFC and EXPLOSION-PROOF

For especially dirty, corrosive or hazardous applications, you will get top performance with low maintenance costs from the new Allis-Chalmers totally-enclosed, fan-cooled and explosion-proof motors in NEMA rerate sizes. Here are a few of the reasons:

- Foreign matter kept out of bearings and motor interior by double labyrinth seals inside and outside of bearings, and long running fits between shaft and seals.
- Bearing maintenance reduced because large grease chambers provide space for reserve lubricant; also, if required, grease may be renewed without dismantling.
- Easy to clean — no inaccessible air passages. Dirt wipes or blows off easily.

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S-CHALMERS

When inquiring check CP 6909 on handy form, pgs. 2-3

GET COMPLETE INFORMATION NOW Allis-Chalmers, Milwaukee 1, Wis.

Send for these bulletins:

- ☐ Open — Drip-Proof, Type G, 5186210
☐ TEFC, Type GZ, 5187225
☐ Explosion-Proof, Type GZZ, 5187286

Name.....

Company.....

Position.....

Address.....

City and State.....

A-4780

Agriculture finds many uses for vermiculite . . .

latest development is as carrier with iron chelates to supply iron to plants

Vermiculite, a hydrated magnesium-aluminum iron silicate, found its first use as a decoration for Christmas store windows and cards. New uses are being found at a rapid rate. The agricultural field is especially active in this respect.

Of the 15 elements needed as a minimum for healthy plant life, eight are metals. Experiments indicate these metals may be provided in chelate form, using vermiculite as a carrier. Chelates are chemical agents which trap and hold the atoms of metal in solution. Iron chelates are being used to provide soluble iron for plants suffering from iron chlorosis. If applied as a liquid spray, the chelate damages the plant. If applied by itself directly to soil, it quickly leaches away. Vermiculite absorbs the chelate and holds it in the soil until plant is ready to use it.

Insecticides applied to soils to combat root-invading pests are reported to be very effective when carried by vermiculite, which prevents leaching. Liquid insecticides mixed with the mineral may be applied as powder, combining convenience with minimum waste.

A product containing .74 per cent mercury and 99.26 per cent vermiculite makes a widely used dry, powdered, dustless, crabgrass killer.

In mixed chemical fertilizers, vermiculite absorbs the moisture liberated as the fertilizer cures, together with any moisture drawn from the air by the fertilizer ingredients. It is stated that about 1½ million tons of commercial fertilizer were conditioned with the mineral in 1953 to prevent caking and to assist in maintaining flowability.

Additional uses of vermiculite include: as an aggregate for lightweight concrete and plaster, as insulation, in sound absorbing materials.

(Vermiculite is product of Zonolite Company, Dept. CP, 135 S. LaSalle St., Chicago 3, Ill. . . . check CP 6910 on handy form, pages 2 and 3.)

Demonstrations vividly illustrate advantages of explosion-proof electrical equipment . . .

show how hazards presented by flammable gases and dust can be overcome

Demonstrations currently being given by manufacturer illustrate how explosion-proof electrical equipment functions. Shortly after demonstration team enters a plant, a series of loud popping noises may be heard. Actual explosions within electrical enclosures are set off to show how equipment overcomes hazards presented by flammable gases and dust.

(For more information on demonstrations contact Crouse-Hinds Co., Dept. CP, 1347 Wolf Ave., Syracuse, N. Y. . . . check CP 6911, pages 2 & 3.)

**\$20,000.00
SAVED
IN PRODUCTION
COSTS IN
3 YEARS**

**CLAY
PREPARATION
TIME CUT
FROM 6 DAYS
TO 45 MINUTES**

**MAINTENANCE
COSTS REDUCED
75%**

...all with 1 SIMPSON Mix-Muller in a DRY MIX process!

PASS & SEYMOUR, INC., well-known electrical porcelain producers of Syracuse, N.Y. have tested and proved beyond doubt the time and money saving advantages of using a Simpson Mix-Muller in the key spot.

As compared with previous clay preparation methods, here are some of the benefits gained since their Simpson was installed three years ago: *\$20,000 savings in labor and production cost; Former time of five to seven DAYS to produce dry press clay body cut to 45 MINUTES; Simpson Mix-Muller has cut former maintenance costs by 75%, with NO major repairs required in three years.*

If you are looking for ways to save time and money in mixing ANY dry, semi dry or pasty material . . . you can't afford to overlook the time tested and *proven* advantages of mulling in a Simpson Mix-Muller.

A letter or phone call will put our years of specialized experience at your disposal.

DO YOU KNOW WHAT MULLING IS?

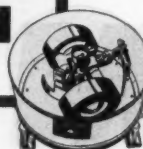
Watch the practiced technique of a chemist's mortar and pestle—the intensive rubbing and smearing actions—and basically, THAT'S MULLING!

Mulling with a SIMPSON Mix-Muller utilizes a special pair of revolving mullers and plows mounted on a stationary pan. The mullers are adjustable and are supported by rocker arms. This leaves them free to ride on the material, creating a true mulling action as they revolve. The results are thorough, more rapid blending.



SIMPSON MIX-MULLER® DIVISION

NATIONAL ENGINEERING CO., 640 Machinery Hall Bldg., Chicago 6, Ill.
(Not Inc.)



When inquiring check CP 6912 on handy form, pgs. 2-3

IDEAS

Produce styrene substitute from toluene, acetylene . . .

process involves vapor phase catalytic cracking using natural clay catalyst

Currently being investigated on a pilot plant scale is process for producing methyl and dimethylstyrene from toluene and acetylene. The polymers produced from these products are being studied as possible replacements for styrene. Starting materials are relatively cheap and readily available. Large scale production may be underway some time in the future.

Production involves the following steps: (1) synthesis of 1,1-diarylethane; (2) catalytic vapor phase cracking of diarylethane to corresponding substituted styrene; (3) isolation and purification.

In the first step, toluene is reacted with acetylene in the presence of sulfuric acid with traces of added mercuric sulfate. Important variables include agitation, catalyst composition and dispersion, and acid concentration.

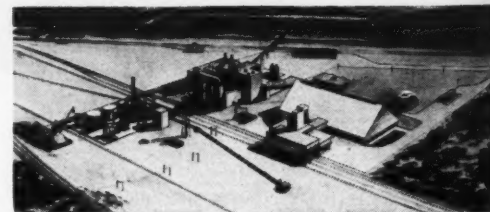
Catalytic cracking of diarylethanes to methyl and dimethylstyrene is accomplished by process similar to petroleum refinery catalytic cracking. Kaolinite, a natural clay catalyst, is utilized at temperatures approximately 525°C. Important factors during this phase include dilution, contact time and pressure.

Purification is accomplished by distillation in same manner as purification of styrene from ethylbenzene. Distillation techniques are more stringent in that lower pressures are necessary to hold temperatures below 100°C. This assures satisfactory performance of polymerization inhibitors.

(Information provided through courtesy of Research Division, Stamford Research Laboratories, American Cyanamid Company, Stamford, Connecticut.)

Davison now in concentrated fertilizer field

The new \$121½ million triple superphosphate plant of The Davison Chemical Corp. marks company's entry in concentrated fertilizers. Plant, near Bartow, Fla., uses the Dorco strong phosphoric acid process to produce acid analyzing 32 to 33% P₂O₅, with



Architect's drawing of Davison's triple superphosphate plant

single stage of filtration. Fines recirculation system assures a free-flowing, 100% granular fertilizer. (Plant was designed and engineered by The Dorr Company, Dept. CP, Barry Place, Stamford, Conn.)

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**Use of gold for rupture disc
attains precision blowout
at low pressure . . .**

disc 4" diam x 0.002" thick lets go at 18 psi

Gold is being used for manufacture of low-pressure rupture discs. These are now commercially available for use in numerous industrial applications. Other precious metals, chiefly platinum, and non-precious metals have been used for production of rupture discs for many years. In making a disc which would burst consistently at low pressure, be immune to corrosion, and still be economical, gold has been found to be the answer.

Gold disc was recently designed for specific chemical operation where a bursting pressure of 18 psi was required. Four inches in diameter, it is of 0.002" normal thickness. Tolerances can be held to $\pm 5\%$ of specific bursting pressures for requirements above 50 psi and $\pm 2\%$ for pressures less than 50 psi.

Simple precautions assure that none of the metal is lost during the rupture. Cost of discs does not differ greatly from base metal discs because precious metal is reclaimable.

Discs of precious metal other than gold are fabricated for pressures up to 10,000 psi. However, composite discs of base metals faced with precious metals require additional manufacturing procedures which make their costs higher than solid precious metal discs.

(Low pressure rupture discs were developed by Baker & Co., Incorporated, Department CP, Newark, New Jersey.)

**Pumping gas back into wells
is job of gas turbines
in Venezuela . . .**

mounted on platform seven miles out in lake
turbines are run by the fuel they pump

Pumping gas from an oil well back into an oil field reservoir to conserve energy and increase ultimate production of the field is a job to be handled by 10 gas turbines. They will be used by the Creole Petroleum Corp. in their Tia Juana field located in Lake Maracaibo, Venezuela.

Turbines will be mounted on a platform about seven miles out from shore. Gas from various flow stations will be piped to turbine platform, at a pressure of about 10 psi. Ten per cent of the gas will be used as fuel for the turbines. Turbines to operate centrifugal compressors which will return remainder of gas to wells at a pressure approaching 2000 psi.

Selected because they weigh less in comparable capacities and vibrate less than reciprocating engines, turbines are two-shaft simple cycle type rated at 6000 hp each.

(Information courtesy of turbine manufacturer, General Electric Co., Dept. CP, One River Rd., Schenectady 5, N. Y.)

**more than 50 years
of experience in
designing and
building dryers
for industry . . .**



Louisville dryers

**used throughout
the world for
great efficiency
with low maintenance**

**LOUISVILLE DRYING
MACHINERY UNIT**

**GENERAL AMERICAN
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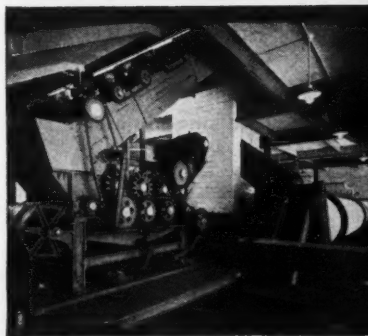
Dryer Sales Office: 139 S. Fourth Street, Louisville 2, Kentucky
General Offices: 135 South LaSalle Street, Chicago 90, Illinois
In Canada: Canadian Locomotive Co., Ltd., Kingston, Ontario
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**KNOW THE RESULTS
BEFORE YOU BUY**

Louisville engineers will test your dryer needs in our laboratory. When required, a pilot model will be checked in your plant before full-size dryers are built.

Louisville's creative engineering pre-determines results for you!



When inquiring check CP 6913 on handy form, pgs. 2-3



Here's Insurance Against Shutdowns for Pressure Tube Users

● That dial on the right tells the story. It's on our hydrostatic tester. And every single piece of Republic ELECTRUNITE Pressure Tubing has to pass this test and prove itself equal to code requirements *before* it can be shipped.

This is only one of many rigid controls which help maintain the high quality of ELECTRUNITE Pressure Tubing. It begins from the time the ore for the steel is mined. It continues through the producing of the flat rolled steel sheets, in Republic's own mills, until these sheets are made into ELECTRUNITE Tubing by Steel and Tubes Division.

Republic customers have found that this testing pays off. In boilers, in condensers, in heat exchangers. And it's been doing this for more than twenty-five years in all kinds of processing equipment. If you want more facts, write for Booklet SPI-54.

REPUBLIC STEEL CORPORATION Steel and Tubes Division

206 East 131st Street, Cleveland 8, Ohio
GENERAL OFFICES • CLEVELAND 1, OHIO
Export Department: Chrysler Building, New York 17, N. Y.



ELECTRUNITE — The Original Electric Welded Boiler Tube

When inquiring check CP 6914 on handy form, pgs. 2-3

ideas



Fig 1—Comparison of paper surfaces, 150x — size press coated (left) and regular starch sized (right)

paper coatings upgraded with synthetic latex

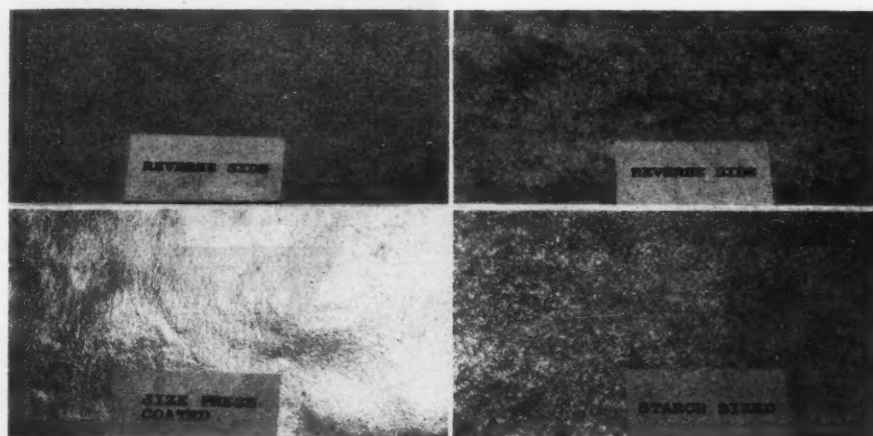


Fig 2—Comparison of varnish holdout and gloss development of size press coated and regular starch sized stock

Improvements in surface smoothness, gloss development, and wet-rub resistance are reported

Several years of using latex as a partial adhesive in machine and off-machine coatings have demonstrated its utility as an adhesive. It is currently being used in the paper industry in conjunction with casein, isolated soya protein, starch, and glue to produce many types of coated paper. The

amount of latex used ranges from 25 to 50 per cent of the total adhesive content.

Using a styrene-butadiene latex, known as Dow latex 512-X, in combination with starch and clay as an undercoating for subsequent overcoating, it has been found that certain advantages are obtained over straight starch coatings. For example, with a six-lb size press coating containing 100 parts of clay, 20 parts of latex and 20 parts starch on 44-lb stock, bursting strength was increased 17%, tearing strength 27% in machine and 19% in

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cross-machine direction. Resistance to air penetration increased 500%.

Comparison test on body stock picking resistance showed that regular starch sized stock picked severely at testing speed of 720 rpm, while size press pre-coated stock was unaffected. Test indicated that even at the maximum speed of the pick tester (1440 rpm), size press precoated stock had only slight body stock pick.

Because the polymer in the latex is somewhat thermoplastic, it flows and permits movement of colored pigment particles when subjected to the heat and pressure of calendering operations. This increases effectiveness of calendering, results in smoother product, and improves gloss development. The latex has good pigment-binding properties and imparts wet-rub resistance, which is important for off-set printing. By filling in the void between fibers, surface density increases and greater clarity is obtained in printing.

Lacquer holdout of raw stock can also be improved by the application of pigmented size press coating. A comparison of varnish holdout and gloss between size press coated and regular starch sized paper is shown in Fig 2.

Using TAPPI routine control method RC-19, which involves the use of a spectrophotometer, a K and N ink receptivity comparison was made. Spectrophotometer was set at a wavelength of 580 millimicrons.

Size press precoated paper gave 43.3 value as com-

DRY WEIGHT	WET WEIGHT	INGREDIENTS	USED AS
1000 LBS.	1540 LBS.	MACHINE COATING CLAY	65% AQUEOUS DISPERSION
17.5 LBS.	46.0 LBS.	STABILIZED DOW LATEX 512K	38% DISPERSION
17.5 LBS.	87.5 LBS.	STARCH, ENZYME CONVERTED	20% AQUEOUS SOLUTION
	50.0 LBS.	WATER	
135.0 LBS.	337.5 LBS.		

PERCENT SOLIDS OF COATING COLOR—40%

Fig 3—Typical size press formulation

pared to 36.3 for paper with normal starch sizing. In addition to ink holdout, paper with size press precoating did not have mottled appearance evident in starch sized paper.

Applications of styrene-butadiene latex have been successfully made using many types of coating equipment. Drying of coatings on conventional paper machines has not presented any difficulties. Examples of products are: folding, high-gloss enamels for letterpress printing; flat, non-picking, moisture-resistant paper for offset printing; and high-grade, washable wallpaper.

(Digest of paper presented at TAPPI meeting in Cincinnati, Ohio, by Messrs. L. H. Silversnail and E. J. Heiser, of Dow Chemical Company, Midland, Michigan.)



Here's Aluminum Chloride in the RIGHT SIZE for your use

Most often, a particular process using aluminum chloride, anhydrous, works best with a selected particle size.

We have taken technical liberties in this picture (exposing aluminum chloride to the air) to show you the four sizes available from Hooker.

Extra work of screening isn't necessary when you specify Hooker aluminum chloride. The four sizes give you a choice that will meet just about every process requirement:

1. *Extra fine grind* is unscreened, with

90 to 95% passing 40 mesh.

2. *Fine grind* is unscreened, practically all passing 20 mesh.

3. *Coarse grind* is unscreened, 1 mesh and finer. It contains 25 to 35% finer than 20 mesh.

4. *Coarse screened* is the same as coarse grind (No. 3), but is screened to remove 20 mesh and finer.

Before re-ordering your requirements, get the facts on Hooker aluminum chloride. For technical data,

just phone the nearest Hooker office listed below, or mail the coupon today.

Need other chlorides? This is only one of several metal chlorides available from Hooker. Chlorinated organics and inorganics are specialties with us; we've been making them for more than 30 years. If you need a special chlorine-containing compound in quantity, we may be able to produce it for you economically. To find out quickly, just phone the nearest Hooker office or write us today.

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Please send:

- ☐ Data sheet on Hooker aluminum chloride, anhydrous
☐ Bulletin 100 describing Hooker products and services

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Company..... Address.....
City..... Zone..... State.....

When inquiring check CP 6915 on handy form, pgs. 2-3

**Handbook offers valuable advice
for foreman and supervisors**

Factual, informative handbook presents over a hundred actual cases, selected for their representative quality, involving problems arising every day in business and industry. Absenteeism, vacation pay, grounds for dismissal, overtime, defective work, slowdowns, status of union stewards and many other human relations problems are covered. Large section of book explains how rights of management can be best served in drawing up contracts.

Human Relations Casebook is available by remitting \$3.00 direct to National Foreman's Institute, Dept. CP, 100 Garfield Ave., New London, Conn. . . . or for more information specify CP 6916 on handy form, pages 2 and 3.

**Vacuum forming of plastics
opens new applications
in packaging field . . .**

variety of plastic sheet materials up to 0.125" and 28 sq ft made into package components



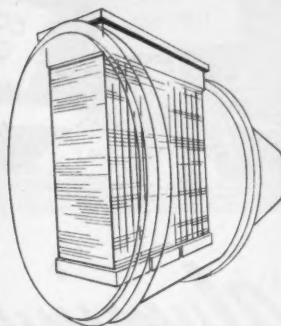
The underside of a package made by vacuum forming of plastic. Depth obtained permits the article to be almost completely enclosed in its package

Growing utilization of contour packaging has come as a result of steady progress with vacuum forming techniques for sheet thermoplastics. Protective casings are now being produced for pharmaceutical and food products, and for precision instruments where faithfully reproduced plastic shapes afford a maximum of protection. Display value of such packaging is apparent.

Vacuum forming has become simple, inexpensive, and versatile. Process consists of controlled heating of a plastic sheet clamped over a mold, drawing a vacuum which evacuates a chamber formed between the sheet and the single mold die, followed by cooling. Sheet regains its rigidity and essentially a finished product is removed from the mold. Of course, there are innumerable variations in the forming technique to attain specific effects.

Perhaps the greatest value from vacuum forming is its versatility to numerous plastics — polystyrene, modified styrenes, polyethylene, acetate, butyrate, and all vinyl polymers have been successfully shaped. In addition, it is adaptable to the weight and nature of the object to be pack-

VESSELS



Sketch shows general arrangement of assembled exchanger. Tube bundle is installed through rectangular opening in the top on which tube sheet rests.



Exchanger shell, 15-feet in diameter, of welded construction, as designed and built in the A. O. Smith vessel shop.

COOLER FOR GAS DY

**A case history of A. O. Smith design,
engineering and manufacturing skill**

It required the combined pressure vessel and heat exchanger shops of A. O. Smith to produce this, and similar coolers, for the Gas Dynamics Facility of the Arnold Engineering Development Center at Tullahoma, Tennessee. They will cool air for a supersonic wind tunnel. Thermal capacity of this cooler is approximately 85,000,000 BTU/hr. It is designed for 140 psi on the water side, full vacuum on the air side, and to handle as much as 1,890,000 pounds of air per hour with inlet temperatures as high as 410° to 435° F.

The shell, above, is so big and tolerances so exacting that its construction required the services of a manufacturer with a proved record of diverse vessel experience to fabricate it. It is a weldment, 15 feet in diameter. Yet, maximum out-of-round tolerance is but 1/16" of wall thickness and the ends of the vessel are perpendicular to axis within —0° 10'. Clearance between baffles and the tube bundle, when installed, is held to 0.125 inch to prevent air by-pass.

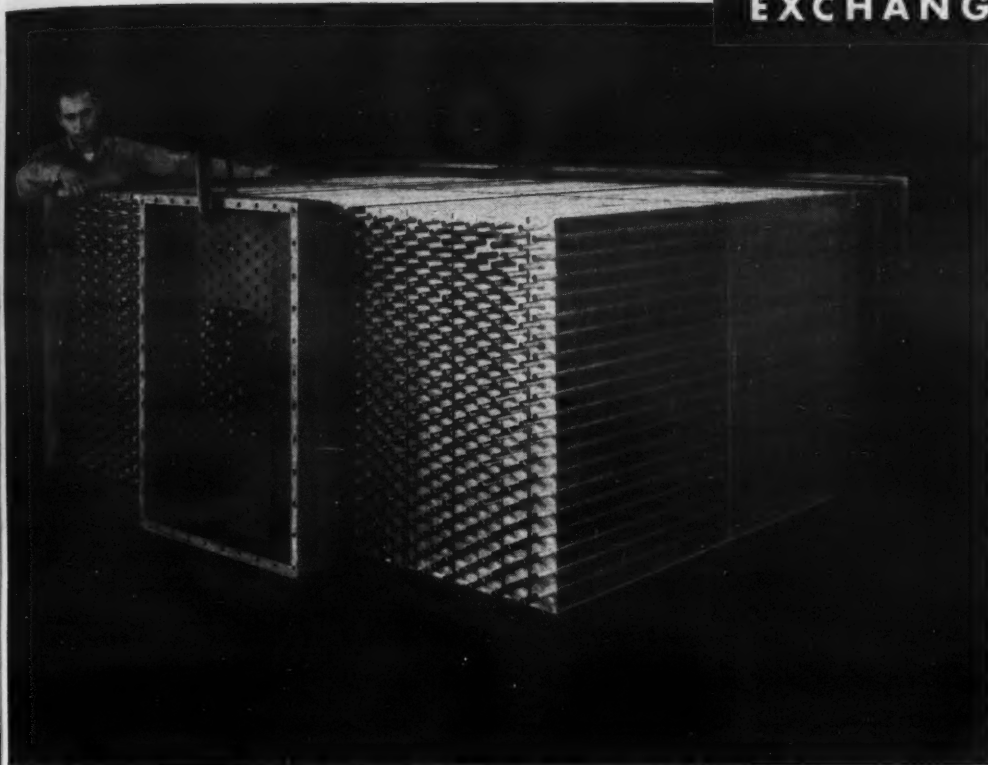
Few manufacturers can take on the responsibility for such a vessel and at the same time provide the equally exacting tube bundle which it houses.

The tube bundle consists of 1,890 tubes, each 1/2 inch in diameter, and 1,890 tube sheets, of A. O. Smith design, in service and maintenance of a por-

For

For Outstanding Advantages

EXCHANGERS



Tube bundle for exchanger as designed and built in the A.O. Smith heat exchanger shop.

ASDYNAMICS FACILITY

so exacting
of a man-
essel expe-
feet in diam-
ce is but 1/4
e vessel an-
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installed, is

The tube bundle, providing approximately 80,000 square feet of outside surface, is made up of 3/4-inch tubes and aluminum fins spaced 12 to the inch, mechanically bonded to the tubes. Multiple floating heads, of A. O. Smith design, assure freedom from thermal stress, meet the extreme operating conditions in service and permit ready accessibility for replacement of a portion of the bundle or individual tubes.

This outstanding example of vessel and exchanger fabrication in one shop reveals the capacity of A. O. Smith Corporation to satisfy your most exacting pressure vessel and heat exchanger problems. Opportunities are invited to assist in planning, designing and fabricating complete vessels and thermal transfer units. Inquiries will receive prompt and expert attention.

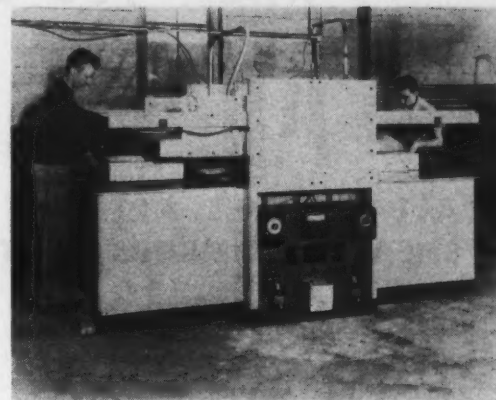
For glass-lined process equipment, contact
GLASCOTE PRODUCTS, INC.
Cleveland 17, Ohio
A new A. O. Smith subsidiary



A.O. Smith
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MILWAUKEE HOUSTON LOS ANGELES
INTERNATIONAL DIVISION: Milwaukee 1, Wis.

When inquiring check CP 6917 on handy form, pgs. 2-3

IDEAS



A 30 x 50" twin-table vacuum forming machine in operation. At the left, the vacuum has just been applied, shaping the piece. At the right, the finished piece is removed from the mold. Thus, while one sheet is being heated at one table, the molded sheet is removed and the new sheet clamped in at the other. This alternating operation makes for maximum economy of time and heat energy

aged — plastic sheets varying in thickness from 0.001-0.125" can be vacuum formed without noticeably affecting the basic strength of the plastic. Sheets up to 17 x 21" are conveniently handled, and one machine handles sheets of 28 square feet.

(Vacuum forming machines are a product of the Auto-Vac Company, Dept. CP, Fairfield, Connecticut . . . or for more information check CP 6918 on handy Reader Service slip located between pages two and three.)

Developing effective tests for plastic pipe . . .

SPI sponsors research program at Battelle

Backed by 29 companies in the plastics industry, an extensive engineering research program is developing effective test methods and engineering data on plastic pipe. Being considered are such factors as bursting strength, safe working pressures, long range serviceability under static pressure, and dynamic loading. Materials being evaluated are cellulose acetate butyrate, polyethylene, polystyrene, and polyvinyl chloride.

Also being developed are voluntary industry standards on dimensional weights, sizes, and performance specifications. It is planned that these will be issued through the Commodity Standards Division of the US Department of Commerce.

The Society of the Plastics Industry, Inc., is co-operating with the Battelle Memorial Institute, Columbus, Ohio, in the development of these test procedures. The program is expected to be completed in about two years.

(Above information supplied by The Society of the Plastics Industry, Inc., Dept. CP, 67 W. 44th St., New York 36, N. Y.)

WHEN YOU BUY SHEAVES... Get All These Features!

ALL SHEAVES ARE NOT ALIKE. ONLY *Magic-Grip* SHEAVES COMBINE ALL THESE IMPORTANT FEATURES:

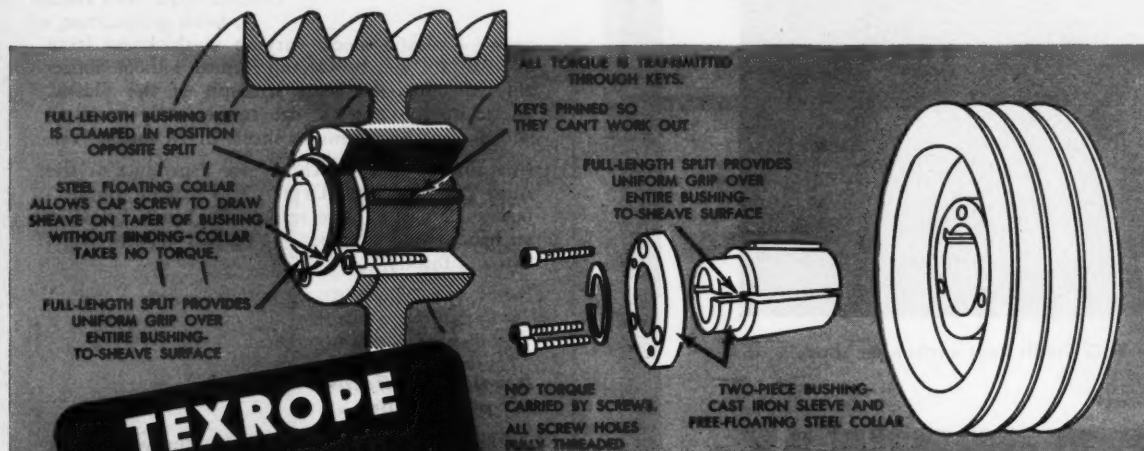
1 Full-length contact between bushing and shaft. Bushing is slit full length instead of part way. Result — when tapered bushing is slid into tapered sheave bore, pressure is applied equally all around bushing along full length. Sheave can't get out of alignment or develop excessive runout.

2 Full-key drive — Torque between bushing and shaft, and between bushing and sheave is transmitted by keys instead of threaded screws. Jamming of screws from shock overloads eliminated.

3 One-piece mounting — *Magic-Grip* sheave installs as a unit instead of in two pieces. Simply slip sheave on shaft and tighten cap screws. Complete sheave can be moved back and forth on shaft to adjust position.

4 Full-threaded screws — Cap screws in *Magic-Grip* sheaves engage a full thread — instead of a partial thread. Stripping and jamming problems eliminated!

Texrope and Magic-Grip are Allis-Chalmers trademarks.



All Allis-Chalmers sheaves available with *Magic-Grip* bushing.

Get more information on the fastest mounting sheave on the market. Call your nearby A-C distributor or district office. Or write Allis-Chalmers, Milwaukee 1, Wisconsin. A-4278

Here's Comparison of Magic-Grip Sheave and Other Sheaves

	Magic-Grip Sheaves	SHEAVE A	SHEAVE B	SHEAVE C
Bushing fully split for uniform clamping action.	Yes	Yes	No	Yes
Load carried by keys instead of threaded bolts.	Yes	No	No	No
Bushings cover full range of NEMA "probable" shaft diameters.	Yes	Yes	Yes	No
All screws engage full thread.	Yes	Yes	Yes	No
Mounts in one piece.	Yes	No	Yes	Yes
Squares itself with shaft.	Yes	No	No	No

ALLIS-CHALMERS



When inquiring check CP 6919 on handy form, pgs. 2-3

IDEAS

Here are variables to check when choosing crusher . . .

poor machine performance usually means it's on job for which it's not intended

Misapplication—improper size, type, or design of machine for a specific job—is by far the prime reason crushing machinery doesn't deliver peak performance. Too often the crusher is doing something for which it was not intended. Mechanical reduction laws and theories are of some use, but do not provide the complete answer in crusher application. Many variable factors must be considered.

Chemical and physical characteristics of feed should be checked carefully. Degree of hardness, softness, wetness, abrasiveness, friability, and temperature can be important. Size of feeds tells a lot on how big crusher should be, including hopper size.

Size, shape, and tonnage of product are check-points. The first two point to the type of machine required. Amount of fines desired also helps in determining type of machine, as well as screening, conveying, and feeding equipment necessary. Tonnage, of course, is needed for setting crusher size.

Maintenance and adjustments should be investigated as an indication of possible downtime and labor costs. Abrasiveness of materials has much to do with choosing crusher type. A crusher that can be adjusted to maintain product uniformity and longer service of parts is desirable. Power requirements are big items in grinding costs per ton.

Versatility sometimes decides in favor of one type of machine over another, where it may be necessary for one crusher to handle several materials varying in feed size, product size, and tonnage.

(From "A Handbook of Crushing," a 34-page booklet on the subject, published by Pennsylvania Crusher Company, Division of Bath Iron Works Corporation, Dept. CP, Liberty Trust Bldg., Philadelphia 7, Pa. . . . or for more information check CP 6920 on handy form, pages 2 and 3.)

Shows how to construct vibration-free table

Plans and instructions for constructing a vibration-free balance table for the laboratory are shown in bulletin. Table can be constructed for every type of analytical balance by any laboratory "handyman". Balance-support is mounted directly to a firm, load-bearing wall, while remainder of unit (table-space for samples, notebook, etc) does not touch support at all.

Bul FS-240 is issued by Fisher Scientific Co., Dept. CP, 717 Forbes Street, Pittsburgh 19, Pa. When inquiring specify CP 6921, pages 2 & 3.

For more information on product advertised at right, specify CP 6922 . . . see information request blank between pages 2 and 3.

CHEMICAL PROCESSING

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ESSING



MODERN EQUIPMENT and closest attention to every casting detail enable new Aloyco foundry to turn out the finest corrosion-resistant valve castings made.

New Aloyco foundry helps process industries in record expansion



PATTERN SHOP. In this well-equipped shop seasoned craftsmen make extremely accurate wood or metal patterns for valves of any size or complexity.



SHELL MOLDING. Up-to-date shell molding facilities assure users of the greatest contour accuracy in castings for small and medium-sized Aloyco valves.

During 1954, almost half the nation's total investment in new plants and equipment will go into the chemical and petroleum industries.

To meet their unprecedented needs for processing equipment, our new specially-equipped foundry will substantially increase the production of Aloyco corrosion-resistant valves.

For 25 years, Aloyco, the world's largest specialist in high alloy valves, has been helping the chemical process industries master valve corrosion problems. Alloy Steel Products Co., Inc., 1301 West Elizabeth Avenue, Linden, New Jersey.

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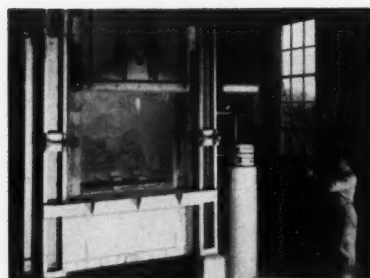
Plants: Linden, N. J.; Bloomfield, N. J.; Elizabeth, N. J.

DISTRICT OFFICES

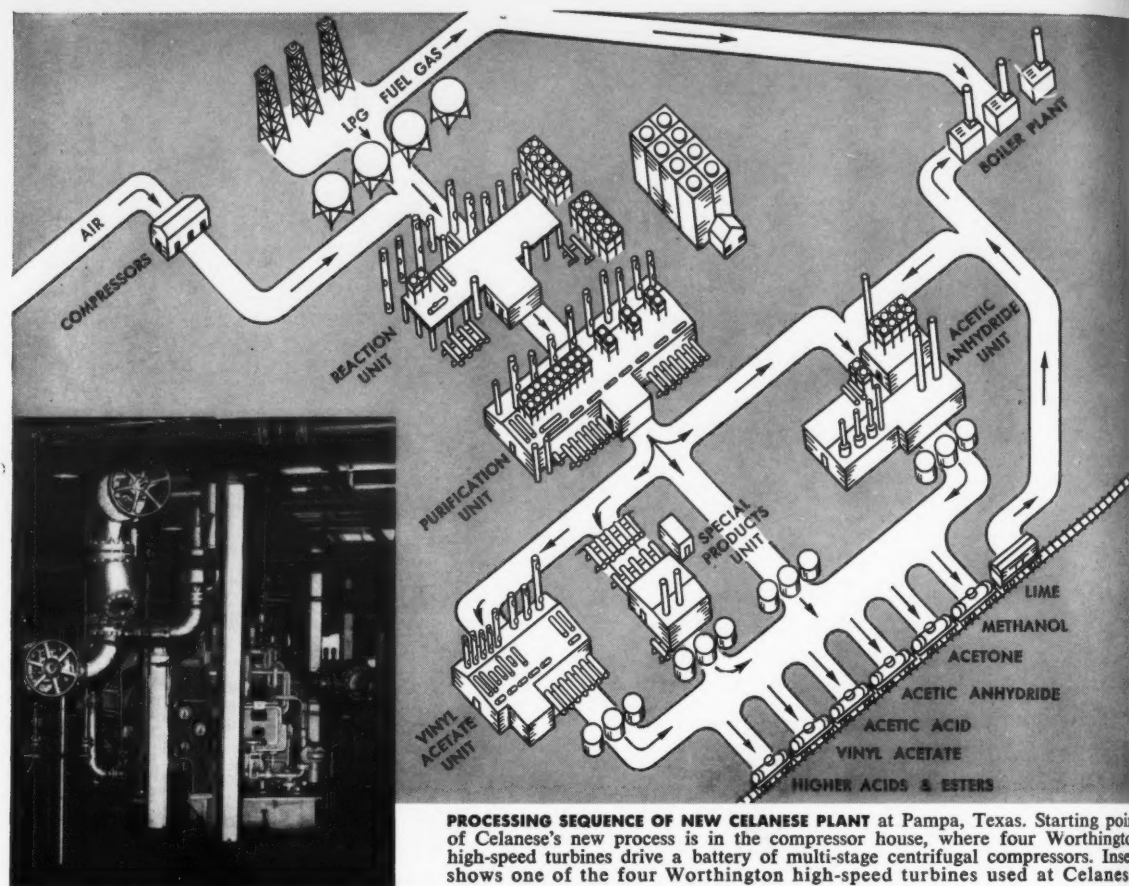
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INSPECTION AND HEAT STAMPING. Castings are carefully inspected, their "pedigrees" stamped in. Any not 100% perfect are remelted, never welded or patched.



HEAT TREATING. After cleaning, all Aloyco austenitic type castings are heat treated and water quenched to insure maximum corrosion resistance.



PROCESSING SEQUENCE OF NEW CELANESE PLANT at Pampa, Texas. Starting point of Celanese's new process is in the compressor house, where four Worthington high-speed turbines drive a battery of multi-stage centrifugal compressors. Insert shows one of the four Worthington high-speed turbines used at Celanese.

Four high-speed Worthington turbines drive compressors in new Celanese plant

In May, 1953, Celanese Corporation of America opened their new petro-chemical plant near Pampa, Texas, in the heart of the Panhandle.

By employing a new air-oxidation process, the Pampa plant will produce 1,800,000 lbs. of glacial acetic acid weekly, with 95% normal butane used as a charging stock.

Celanese selected four high-speed Worthington steam turbines to drive the centrifugal compressors used to compress air at the start of the oxidation process. The speeds of the turbines were determined by the nature of the process itself: two of the units are rated 3070 hp at 10,000 rpm, and two are rated 5000 hp at 7500 rpm. The control problem created by this arrangement was solved by using

Worthington Woodward governors with built-in air motors. The four turbine-compressor units are synchronized automatically by instrumentation in the control room.

There's a good reason why Celanese — and so many other leading industrial names — choose Worthington high-speed turbines for compressor and blower drives. They know that Worthington's long experience in compressor-drive engineering assures them of getting exactly the right type and size drive for their needs.

Find out how Worthington can help with your drive problems. Contact your nearest Worthington district office or write for Bulletin 1966 to Worthington Corporation, Steam Turbine Division, Wellsville, N.Y. 137

WORTHINGTON



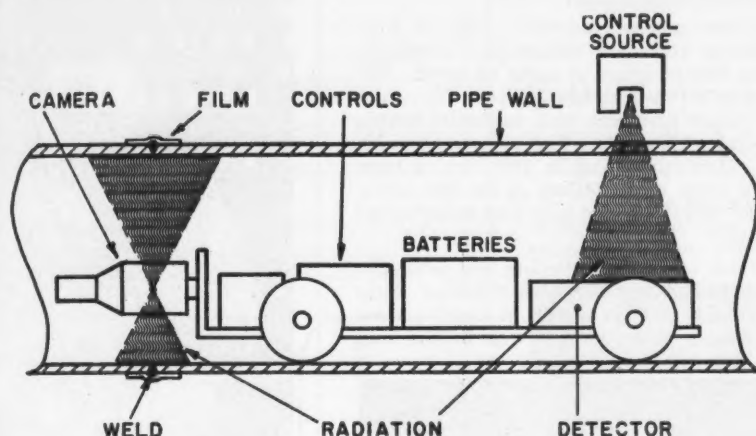
STEAM TURBINES

Single and Multi-Stage Turbines • Turbine-Generators • Deaerators • Boiler Feed Pumps • Surface Condensers

A GREAT TEAM IN STEAM

When inquiring check CP 6923 on handy form, pgs. 2-3

ideas



Internal camera is self-propelled, runs inside of "big-inch" pipelines

Artificial isotopes, special techniques speed up weld inspection

Pipeline, oil storage tank seams checked with rapid one-shot method

Metal and weld inspection by gamma rays, while not new, is a field in which new techniques have been developed due to introduction of the artificial isotopes.

Of the man-made radioactive materials available, iridium 192 has proved to be one of the most valuable. This isotope is easily obtained from Canada's Chalk River pile in strengths up to 100 curies per gram. Its low energy (1.35 mev average) makes shielding and handling of these large sources comparatively simple. Radiographic contrast, in the range of $\frac{1}{4}$ to $2\frac{1}{2}$ " of steel, is higher than those from cobalt or radium.

Several types of exposure "cameras" — lead containers designed to protect operators from radiation and facilitate radiographic exposure — have been developed. These can be carried by one man, and are specialized for various types of weld inspection.

Two types of pipeline cameras have been developed — to operate respectively from inside and outside. Internal camera for "big-inch" oil and gas pipeline inspection is a self-propelled fully automatic unit needing no connections of any sort along the pipe. Exposure camera containing isotope source is at front. When source is exposed,

gamma radiation is emitted in a narrow beam through 360 degrees. Electric drive motor, powered by two storage batteries and controlled by a radiation detection device, propels internal camera unit through pipeline.

Control detector, "brain" of this mechanized camera, is located at rear of unit. It is sensitive to radiations from low curie-strength source which is carried by operator outside pipe.

Operator wraps film around weld and places control source at fixed distance from weld. Automatically, internal camera runs inside pipe until detector reaches point immediately below control source where a trigger mechanism cuts motor and applies power brake. At this point, exposure source is directly aligned with film wrapped around pipe and exposure is made. After controlled exposure time, unit automatically resumes travel until stopped by control source again.

External camera which runs along outside of pipe is designed for smaller diameter lines. Iridium source is mounted in rotating lead shutter operated on an extension cable. Camera is clamped on pipe around welded seam. Film, fastened around pipe opposite camera, will register a radiograph of over 220° of the weld.

In one-shot technique, all the welded seams on a welded pressure sphere and all those

(Continued on next page)

THE SWITCH IS TO...

FATTY ALCOHOLS

Quite possibly one or more of the many excellent qualities of the new Stepan higher fatty alcohols and fatty alcohol sulfates could be of benefit to you. Among these qualities are superior detergency, stability, emolliency, and emulsification. They are also ideal for use as adherents, penetrants, plasticizers, etc. The cost, too, may well be below what you are now paying for fewer advantages. Why not investigate?

STEPAN HIGHER FATTY ALCOHOLS

	% Hydrogen	% Sulfur	% Carbon	% Oxygen	% Nitrogen	Index No.	Approx. m.p. °C.	Visc.
MAKANOL I	8	27	15	50	2	50	2	42
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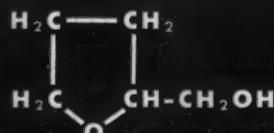
When inquiring check CP 6924 on handy form, pgs. 2-3

Investigate

QO TETRAHYDROFURFURYL

ALCOHOL

THFA*



* Reg. U. S. Pat. Off.

CHEMICAL PROPERTIES: THFA undergoes the reactions of a primary alcohol while the ring exhibits the properties of a cyclic ether. THFA is an important starting point for the preparation of a variety of interesting compounds. High boiling esters and ethers are prepared through the alcohol group; dihydropyran and pyridine may be prepared through reactions involving the ring.

PHYSICAL PROPERTIES:

Boiling point, °C (743 mm.) (pure).....	177
Flash point, Tag. °F.....	172-182
Specific gravity 15.5/15.5.....	1.061
Specific heat, 20-27°C, cal/g.°C.....	0.424
Surface tension 25°C, dynes/cm.....	37
Viscosity, centipoises.....	6.24
Freezing point, (80% THFA, 20% H ₂ O) °C.....	-70

Vapor pressure	temp. °C	pressure mm Hg.
	56	5.5
	99	49.5
	113.5	91.0
	159.5	486.0

USES: THFA is used to make ester plasticizers for vinyl resins; as a solvent for resins and cellulose esters; as a chemical intermediate for dihydropyran; and as a special low temperature antifreeze where severe conditions require unusual properties. Write for a sample, reaction chart and bulletin.

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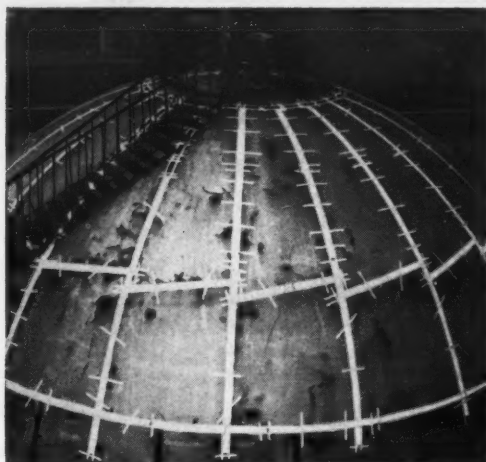
When inquiring check CP 6925 on handy form, pgs. 2-3

IDEAS

(Continued from preceding page)

in two or three courses (concentric rings) of large welded storage tanks are radiographed simultaneously using iridium source at center of vessel. For spheres up to 51' in diameter, sources of 70 to 100 curies of iridium have been used, suspended from a chain in center of sphere. For oil storage tanks, where diameters can run up to 150', two or more sources are often used, totaling up to 200 curies. Up to 2000' of welded seam have been radiographed at one time.

Rapid methods of loading, attaching, and processing of film are necessary in the one-shot technique. Strip film 70mm wide and up to 8'6" in length are encased in flexible plastic holders with built-in lead



Film is in place for one-shot weld inspection

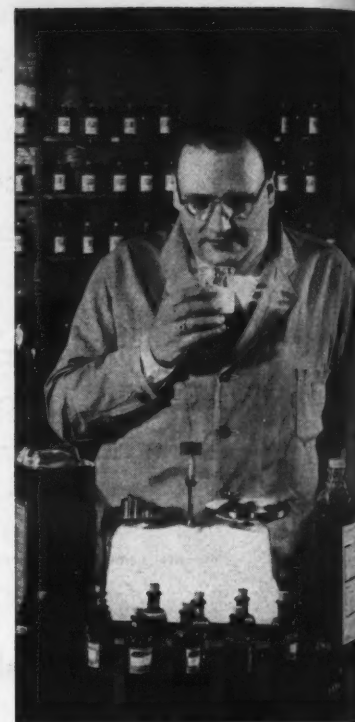
screens to intensify effect of gamma radiation on the film. These holders are sealed with long plastic zippers, and are taped along welded seams.

Exposure time, which can vary from 10 seconds to 48 hr, depends on distance between radioactive material and film, thickness of plates being examined, and type of film used. In radiographing welds in thin-wall 6" pipe, exposure time is a few seconds, while in 150,000 bbl oil storage tanks, exposure time is about one day.

Interpretation of film requires thorough knowledge of all types of defect encountered in welds and castings. Shape of defect appears on film at its exact size, and depth of defect is assessed by its blackness on film as compared with a standardizing block known as a penetrometer. Exact location of defect is determined from markers which appear on film, and also if necessary, by stereoscopic radiography. Since printing as a positive reduces definition, film is always interpreted as negative viewed against a strong light.

Except in rare cases, radiography can only be performed on vessels which do not contain liquids. Tanks containing gas or vapor need not be cleaned or purged before radiography.

(Information for this article was furnished by Isotope Products Ltd., Dept. CP, Box 127, Oakville, Ontario, Canada.)



Positive Solutions to your Odor Problems

Sindar is a pioneer in the development of industrial aromatics and their application in a broad range of products. We offer you the cooperation of our experienced technical staff and the facilities of our specialized research laboratories in helping you solve your product or processing odor problems, positively and economically. We invite your inquiries regarding:

Industrial Aromatics • Deodorants
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When inquiring check CP 6926 on handy form, pgs. 2-3

CHEMICAL PROCESSING

Heat and by welds

can be to five

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Fig. 1— flexing a bellows

ant work Flexibility of bellows possible w Two types bellows co ments, w series of ments. I inner and

NOTE OD and ID remain same throughout entire expansion range

Fig. 2— posit

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(Titeflex of Titeflex Ave., New two and t

Heat and vibration resisted by welded-bellows . . .

can be compressed to solid metal, or expanded to five times the compressed length

Originally developed for atomic energy application, a welded-diaphragm metallic bellows is said to be finding wide application as a shaft seal, expansion joint, and vibration absorber.

Welded diaphragm construction distributes flexing over the entire height of convolution (Fig 1), thus avoiding concentration of flexing and result-



Fig. 1—Conventional bellows (left) concentrates flexing at bend in convolution. In welded diaphragm bellows (right), contoured diaphragm causes distributed flexing, as in cantilever spring

ant work hardening that leads to bellows failure. Flexibility can be increased by increasing height of bellows convolutions. Long expansion ranges are possible with relatively short initial lengths.

Two types of bellows are available. The "standard" bellows consists of a series of male expansion elements, while the nesting bellows consists of a series of nesting male-and-female expansion elements. In nesting type, elements are welded on inner and outer circumferential edges. This makes

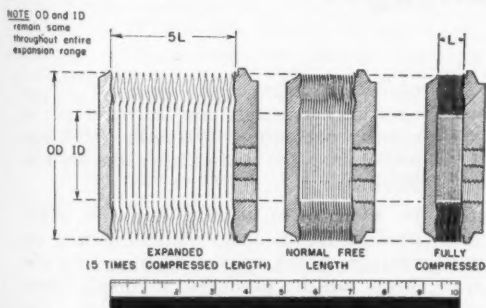


Fig. 2—Cross-section of compressed and expanded positions of welded diaphragm nesting bellows

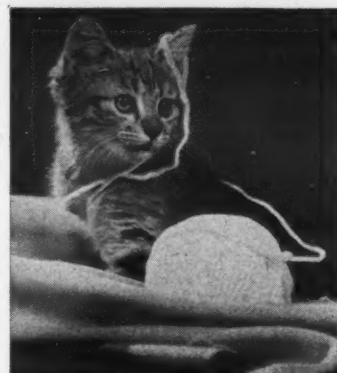
bellows extremely flexible and especially suited for air and steam lines having low internal pressures. Nesting bellows can be compressed practically to length which would be occupied by the solid metal, or expanded to five times compressed length. During extreme variations in length, internal and external diameters remain constant.

(Titeflex welded diaphragm bellows are products of Titeflex, Inc., Dept. CP, 500 Frelinghuysen Ave., Newark 5, N. J. . . check CP 6927, pages two and three.)

CHEMICAL PROGRESS . . at GENERAL MILLS

Fatty Amines Favor Textile "Hand" ★★★★★ Polyamide Resin Is Profitable Coating ★★★★★ Fatty Acids Aid Metal Trade

One Reason That Textiles improved so remarkably in the past 10 years is that fatty nitrogen compounds proved effective for textile finishing. And, they've become even more important since General Mills offers an assured source of supply.



General Mills fatty amines help textile makers turn harsh fibers into kitten-soft fabrics.

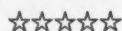
What do General Mills Fatty Nitrogen Compounds do for textiles? Several important things. They serve admirably as intermediates in making softeners, antistatic reagents, and water repellents. Textile finishes made with General Mills fatty

nitrogens give fabrics a soft "hand" and draping quality by adding flexibility, compressibility, and surface lubrication.

For example, the General Mills Alamines (fatty amines) convert readily to textile chemicals that function as wetting agents and detergents . . . and to fatty quaternary ammonium compounds. Since these quats are cationic surface-active agents, they adsorb strongly on negatively charged textile fibers.

You can now get three main types of fatty nitrogens from General Mills: Alitriles (fatty nitriles), Alamines (fatty amines), and Alamacs (fatty amine acetates). The versatile chemical reactivity of these amines makes them important intermediates for your use.

For technical information on General Mills Fatty Nitrogen Compounds, please mail the coupon below—stating your needs or applications.



To Printers, Packagers, and Paper Mills, especially, General Mills Polyamide Resins offer protective paper coating that's hard to beat for profitable operation. These resins aren't quite the cheapest thing on the market, true, but they convince most paper coaters that they are profitable.

Why? Because Polyamide Resins give a high gloss, while "snapping up" the colors without smearing the ink. They're more flexible than most varnishes and won't scuff easily—so they protect your paper products through-

rougher handling, without damage.

Meanwhile, Polyamide Resins are effective barriers, too, protecting your printing or packaging from moisture, abrasion, grease and oils, and most common chemicals. Apply these resins by either hot melt or solvent solution, whichever is most convenient. Polyamide Resins are thermoplastic, so they work fine either way.

You can get standard paper coating Polyamide resins, or resins compounded for added moisture protection and blocking resistance. There are even modifiers for higher or lower melting point, improved resistance to solvent attack, more flexibility, and added tackiness for adhesives and adhesive coatings.

If you would like more information on General Mills Polyamide Resins, just mail the coupon below.



For the Metal Industry, General Mills offers Aliphats (fatty acids) especially suited for producing high quality drawing compounds. These Aliphats react quickly and completely, making it easier to produce a stable emulsion which will be usable for long periods.

We especially recommend Aliphat 25-B because of its high palmitic acid content. This palm type product enables you to take advantage of the well known heat resistance and excellent solubility which characterize these acids, and to do so at low cost.

Aliphat 26-B and 26-C are excellent low cost distilled tallow fatty acids with demonstrated excellence as bases for soaps used in many types of metal working compounds.

For additional information on fatty acids, just mail the coupon below.

There is an ALIPHAT for your specific need.

General Mills

CHEMICAL DIVISION

KANKAKEE, ILLINOIS

Please send me additional technical information for the products checked below.

- ☐ Fatty Nitrogen Compounds for textiles ☐ Aliphats (Fatty Acids) for metal industry
- ☐ Polyamide Resins for paper coating

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progress thru research

When inquiring check CP 6928 on handy form, pgs. 2-3

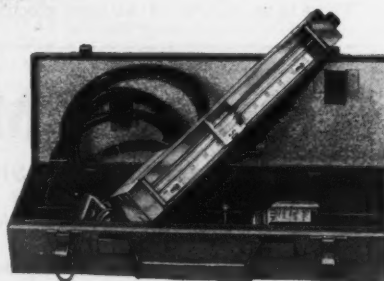
Buying or Selling ...Rely on MERIAM MANOMETER ACCURACY

In custody transfer of valuable liquids or gases, greatest possible accuracy is required by both buyer and seller. Field measuring equipment must be precisely calibrated often. For this purpose Meriam Manometer Models B-2856 and B-2862 are extensively used.

The new, lightweight (twenty pounds) Meriam Model B-2856 Sectional U-Type Manometer in 100" range using water offers the extreme accuracy and sensitivity required for calibration. All-aluminum construction, this model can be "broken" to 50" length for carrying convenience. Interpolated readings to .025" water available.

The Meriam Model B-2862 Portable Field Manometer is the pioneer instrument for field calibration service. Designed with precision bore tubing, glass coated well, magnifier with anti-parallax device and a universal mounting bracket, this model in ranges up to 310" water using mercury, offers a new high in utility and accuracy.

If you have a problem involving field calibration, drop us a line or call your Meriam Technical Representative. THE MERIAM INSTRUMENT COMPANY, 10940 Madison Avenue, Cleveland 2, Ohio.



Model B-2862 and Case



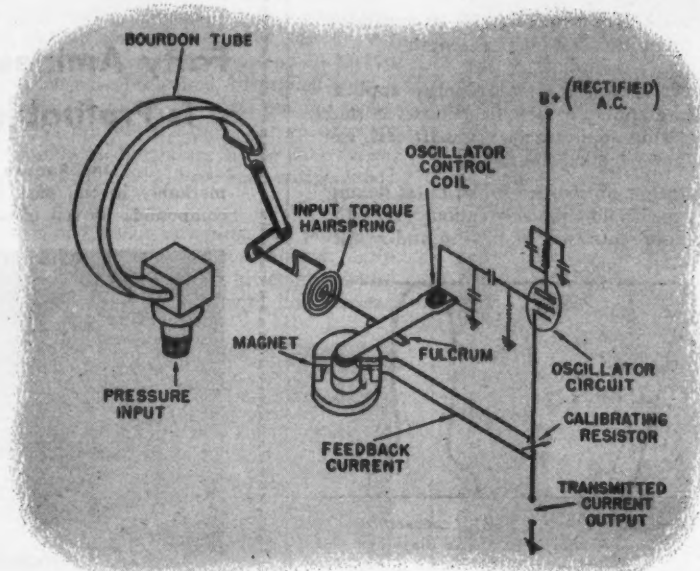
Model B-2856

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★ *Instruments*
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MANOMETERS, METERS AND GAUGES FOR THE ACCURATE MEASUREMENT
OF PRESSURES, VACUUMS AND FLOWS OF LIQUIDS AND GASES

When inquiring check CP 6929 on handy form, pgs. 2-3

instrumentation



Pressure transmitter (see article)

"hybrid" instrument system combines pneumatic and electronic advantages

Conventional sensing elements and pneumatic operators are employed with no-lag DC transmission

Reliability and power available in pneumatic operators are combined with the "instantaneous" transmission features of an electronic system in a complete line of "hybrid" instruments. Principle of operation of the electronic elements is remarkably similar to the principle of pneumatic components for the same job. Transmitted signals are direct current in the range from 0.5 to 5 milliamperes (corresponding in control range from 3 to 15 psi of air).

In addition, system is of the force balance type which is inherently stable. Use of feedback allows good accuracy and reproducibility without the need of specially tailored or selected vacuum tubes, springs, etc. Since DC is used for transmission, simple communication lines are all that is required — capacitance and inductance

effects are unimportant since no AC or electrical transients are encountered in normal operation. Naturally, freeze-up problems in the transmission line are also eliminated.

In addition to sensing elements which produce DC directly, system can take advantage of any conventional sensing element which produces a displacement proportional to measured variable. For example, a Bourdon tube may be used as the sensing element for pressure or temperature (with an ordinary bulb). Operation of a pressure transmitter (see sketch) would begin with a displacement of the Bourdon tube tip with increasing pressure. Through linkage and hairspring, this position change is communicated through fulcrum which is attached to the beam of a "Mircosen" balance.

At this point the electronic components of the system are influenced since a change in the position of the metal flag (end of the beam under oscillator coil) changes

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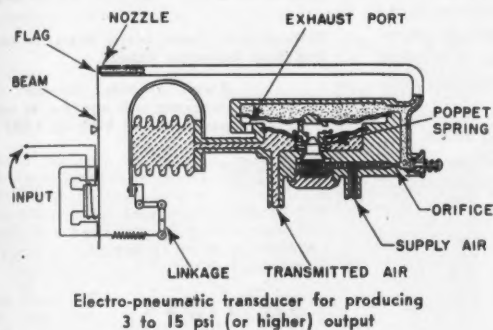
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circuit tuning and hence plate current of oscillator tube. It can be seen from the circuit that this plate current change affects field produced by (electro) magnet. Force balance is then reached at beam position where input torque is balanced with torque produced by magnet. Plate current at this balance is transmitted from terminals labeled "Transmitted Current Output."



Operation of electro-pneumatic transducer is analogous to typical transmitter. In this case, being a simple "following" mechanism, transducer has no vacuum tube circuitry of its own. Typical performance of such a transducer is:

Input range	0.5 to 5.0 ma
Output range —	
standard	3 to 15 psi
maximum	5 to 25 psi
Air consumption	less than 5 cfh
(at constant minimum input)	
Accuracy (based on elec input)	0.5 of 1%
Sensitivity	0.1 of 1%

In addition, variations of ambient temperature from 40 to 150°F cause less than 1/2 of 1% change in output. With zero volume in output, response time is better than 0.2 second. With 1/3 cu ft in output volume, response time is 0.3 second.

(American Instruments are products of Manning, Maxwell & Moore, Inc., Dept. CP, Stratford, Conn. . . or for more information check CP 6930 on handy form, pages 2 and 3.)

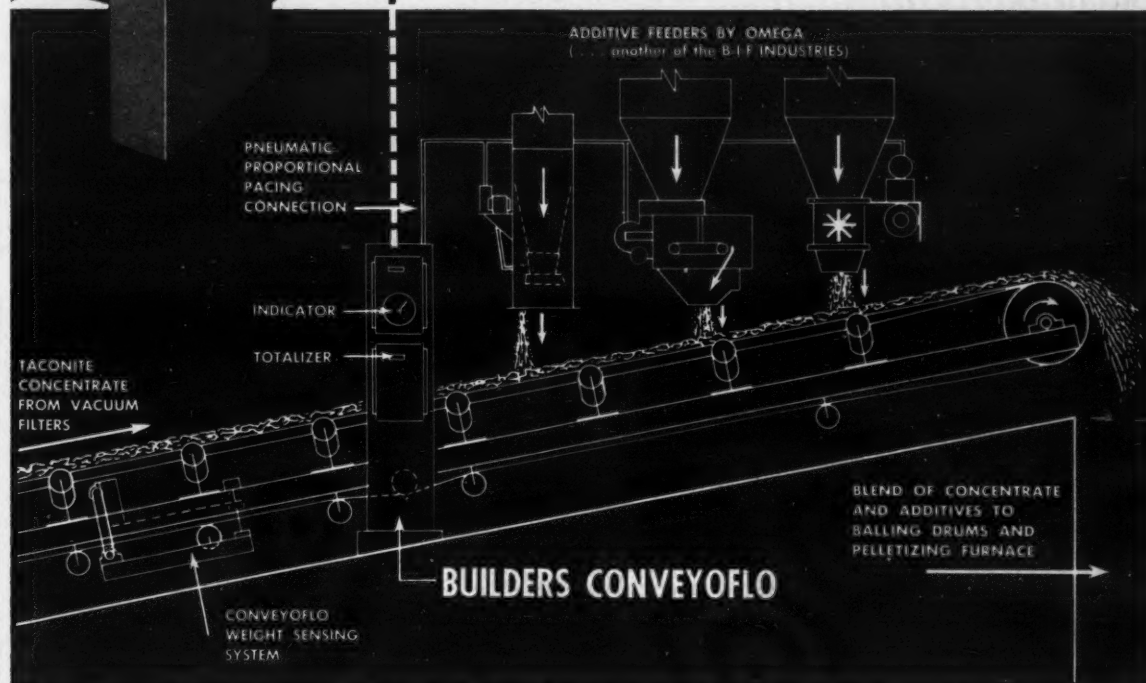
Electronic measuring sensitive to 0.05 micro-micro farads

Two-page bulletin describes electronic measuring instrument applicable to both static and dynamic measurements and sensitive to 0.05 micro-micro farads. Extreme sensitivity to capacitance allows meter to respond to changes in electrolytic solutions. It also measures mass or quality of non-conducting materials.

"Proximity Meter-Capacitance Gauge" is issued by Fielden Instrument Div., Robertshaw-Fulton Controls Co., Dept. CP, 2920 N. Fourth St., Philadelphia 33, Pa. When inquiring specify CP 6931 on handy form, pages 2 and 3.

AUTOMATION TAKES OVER TACONITE PROCESSING WITH . . . BUILDERS CONVEYOFLO

To handle the millions of tons of ore processed in the modern taconite plant requires the latest in high-speed, high-accuracy processing equipment. See in this flow diagram how Conveyoflo's pneumatic weight sensing system is ready-built to pace auxiliary additive feeders to produce the proper blend for the pelletizing process. Then see for yourself how Conveyoflo can help simplify and systematize your continuous processing operations. We welcome your inquiry.



CONVEYOFLO FEATURES

- **ACCURATE** . . . within $\pm 1/2$ of 1% of actual weight from maximum to 50% of rated capacity; within 1% from 50% to 25% rate; within 2% from 25% to 10% of meter's rated capacity.
- **COMPACT** . . . weight sensing mechanism completely contained within conveyor structure. No overhead levers. Panel stand only 9" x 18" — may be any height.
- **AUTOMATIC TOTALIZER COMPENSATION** for variations in belt speed and changes in belt weight.
- **RESPONDS ACCURATELY** to rapid load variations.
- **PACES AUXILIARY EQUIPMENT** (feeders, controllers, continuous blending processes, etc.) and operates secondary totalizers, indicators, recorders.

SEND FOR DETAILS



Builders-Providence, Inc. — Pioneers in meters and controls
(Division of B-I-F Industries, Inc.)
387 Harris Ave., Providence 1, R. I.

Please send Bulletin 550-H4A describing Builders Conveyoflo Meter.

Name

Company

Street

City State

When inquiring check CP 6932 on handy form, pgs. 2-3

BIDDLE Instrument News

MEGGER® ELECTRICAL INSULATION TESTERS

Hand—Rectifier—or
Combination Operation—

Ratings up to 2000 Megohms
and 1000 Volts D-C

HAND CRANK MEG TYPE



of Megger Insulation Tester is a reliable field instrument, light, sturdy, with a constant-voltage type generator—no dependence on batteries or other current supply. By far the most popular instrument among electrical plant maintenance men. Easy to use—easy to read—and rugged in constant services.

RECTIFIER OPERATED Meg Type

of Megger Insulation Tester simply plugs into a convenient outlet. Portable or flush bench-mounted. A dependable production or inspection instrument. Quick, easy readings speed up otherwise costly tests.



DUAL-OPERATED MEG TYPE

of Megger Insulation Tester may be operated by hand or rectifier. Excellent solution for those requiring a versatile instrument for field and bench use.



Write for
BULLETIN
21-45 CP
21-46 CP



INSULATION TESTER & WHEATSTONE BRIDGE in ONE EASILY PORTABLE INSTRUMENT

Measures Electrical Resistances
From a Fraction of an Ohm
up to 1000 Megohms

Affords the facility of:

- A Wheatstone Bridge for measuring conductor resistance of coils, resistors and circuits.
- A Megger Direct Reading Ohmmeter for measuring electrical insulation resistance (ohm and megohm scales).
- A Varley Loop Feature for locating faults on wires (optional).

This Bridge-Meg weighs only 15 lbs. and is completely self-contained with its own constant-voltage generator—no need to be dependent on batteries or other suitable test current.

Why burden yourself with two instruments when you can have the facilities of two for little more than the price of one in one compact, sturdy case. For complete details and prices write for BULLETIN 21-60 CP.

IF YOU MEASURE SPEED ... YOUR BEST BET IS BIDDLE



Dr. Horn
Tachometer



Jagabi®
Tachometer

Instantaneous Speeds or Variations
in Speeds. Write for BULLETIN 35-CP

B-914

Average
Measuring
RPM
or
FPM
Jagabi®
Speed
Indicator



Frahm®
Resonant
Reed
Tachometer

Quick
Accurate
Readings
with
Safety

BULLETIN
31-CP



JAMES G. BIDDLE CO.

• ELECTRICAL TESTING INSTRUMENTS
• SPEED MEASURING INSTRUMENTS
• LABORATORY & SCIENTIFIC EQUIPMENT

1316 ARCH STREET
PHILADELPHIA 7, PA.

When inquiring check CP 6933 on handy form, pgs. 2-3

INSTRUMENTATION

Explains features of positioner for cylinder-operated devices

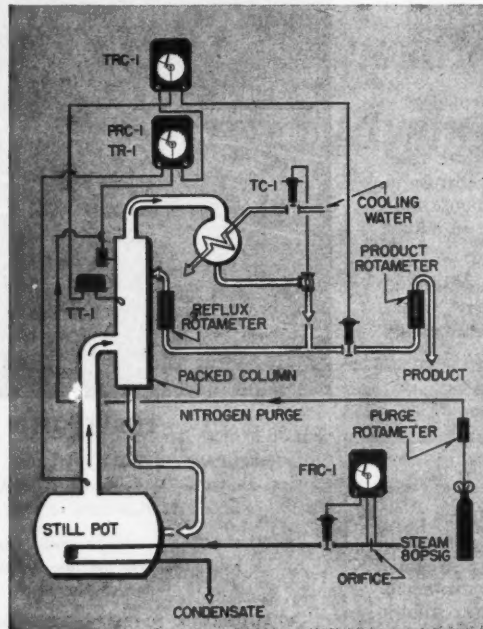
Bulletin gives details on unit which provides high power positioning from instrument signal pressure. Relaying device converts a standard 3-15 psi pneumatic controller signal into high pressure pneumatic differential to position a piston or other springless operator without additional relays. Unit will position equipment requiring high power and long stroke, such as large size control valves, large dampers and variable speed drives, through pneumatic cylinder operating mechanisms. Complete specifications are given with data on specific control problems and solutions.

Bul 473 is issued by The Foxboro Co., Dept. CP, 86 Neponset Ave., Foxboro, Mass. When inquiring specify CP 6934 on handy form, pages 2 & 3.

How instrumentation aids in batch distillation . . .

heat input, product quality held to desired values though distillation is not continuous

Design shown in accompanying illustration was the result of applying instrumentation to a process where economic studies had shown that continuous distillation would not be feasible. Automatic control was



applied to remove the need for product analysis and the difficult control problems of obtaining constant quality overhead despite changing feed composition. A fixed relationship is held among the following variables: feed composition, total molar throughput in column (feed rate), product withdrawal, reflux.



ELECTR-O-PROBE

Distinguishes liquid level, foam, or even interface between liquids

Probe of this "On-Off" instrument will operate at temperatures as high as 1500° F

USES: Controller gives an "on-off" signal when level covers the probe. Can be used to detect liquid or foam level and operates well with viscous fluids, acids, bead and power catalysts or even in locating a liquid-liquid interface.

FEATURES: Sensitivity control may be adjusted so that instrument reacts to or ignores foam.

DESCRIPTION: Liquid level controller reacts to a change in capacity when probe is covered by a liquid or other flowable material. Capacitance change causes a radio-frequency oscillator to reduce or completely stop oscillation when level rises above the probe. Oscillation starts again when level falls below the probe. This change in operation is used to generate a DC voltage signal, which through an amplifier, operates the relay. A plug-in type relay is normally furnished with a DPDT set of contacts—other arrangements may be obtained for special applications.

• Instrument is self-contained except for probe which is attached to it by a low-loss coaxial cable available in any length up to 100 feet. This permits location of the amplifier unit remotely from the vessel.

• The standard model probe is approximately 6" long and may be coated with any protective material, such as nylon or teflon, or may be left bare for applications on non-conductive products. The probe adapter is threaded with 1" national pipe threads and screws into the vessel wall. Probe may be operated at 30" of vacuum or 1,000 pounds pressure. Flanged type probes are available for the higher pressures.

• Temperatures from 65° F to 1500° F do not hinder probe operations, although the amplifier unit proper is designed to operate from 40° F to 200° F. Standard 110 V, AC power is required with the instrument drawing 32 watts. Only three vacuum tubes are used (2050 or 2051, 65Q7, and 6X4).

For detailed information on any problem write to ELECTRONICS DIVISION

INSTRUMENTS, INC.
122 N. Madison Tulsa 6, Okla

When inquiring check CP 6935
on handy form, pgs. 2-3

CHEMICAL PROCESSING

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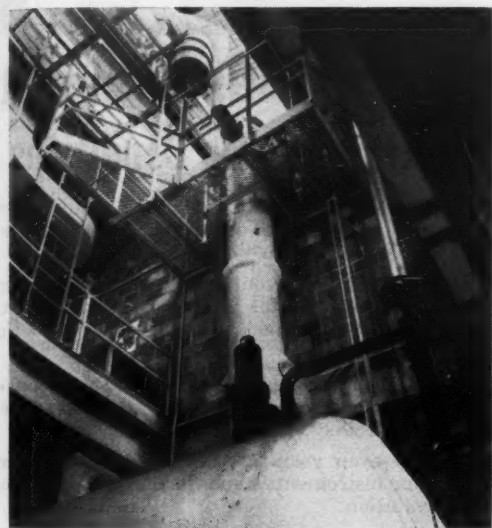
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INSTRUMENTATION

Problem of heat input control was solved on the basis that a fixed temperature difference was to be maintained between still-pot heating coil and feed. This *did not* mean constant steam pressure to coils. Instead, a flow controller was used — it keeps steam flow to coils constant so that heat input is maintained.

Product quality is controlled by means of reflux ratio. Quality is measured by checking boiling temperature of the product. A complication arises in that boiling point varies with pressure; hence, pressure compensation is employed.

As shown in figure, flow controller (FRC-1) maintains constant heat input to still. Preset is used to gradually open valve as boiling point of feed rises with distillation of the batch. Product quality is



controlled by temperature recorder (TRC-1) which notes product boiling point and sets product draw-off accordingly. Note that effects of barometric pressure change and condenser pressure drop are compensated by pressure recorder (PRC-1).

(Instruments employed in this system were manufactured by Taylor Instrument Companies, Dept. CP, 95 Ames St., Rochester 1, N. Y. . . . or for more information check CP 6936 on handy form, pages 2 and 3.)

Need instrumentation for that process? . . .

You'll find just what you need in the alphabetized, itemized Product Directory on pages 214 to 217. All subjects and products presented in ads and editorial columns are there.



CHIEF ENGINEER WILLIAM NOTE inspects the original Leslie Temperature Pilot taken from heater for its first overhaul. Leslie Representatives **Frank Riggio** (left) and **Bob Gentner** (right) look on.

HOW SHOULD A 21-YEAR-OLD BEHAVE?

Temperature Pilot leads flawless life for 21 years prior to its recent, initial overhaul

A 21-year-old Leslie Temperature Control Pilot had its "coming-out-party" recently at the Hessler Laundry, Paterson, N. J. The very first one of its kind ever made, it was installed at the Hessler plant back in 1933 by the firm's chief engineer, Bill Note—who also ordered the pilot's first overhaul in 21 years of continuous service.

The pilot was designed to control constant process temperature over extended periods without necessity for recalibration or replacement of thermal elements. The Hessler field test worked out so well that the pilot was left untouched after its initial setting, for 21 years.

Periodic inspections showed the pilot was doing the job without appreciable wear or need for *any* attention. This year, it was removed from the heater for a complete examination and after a quick clean-up, it was put right back into service.

Top performance suggests other applications

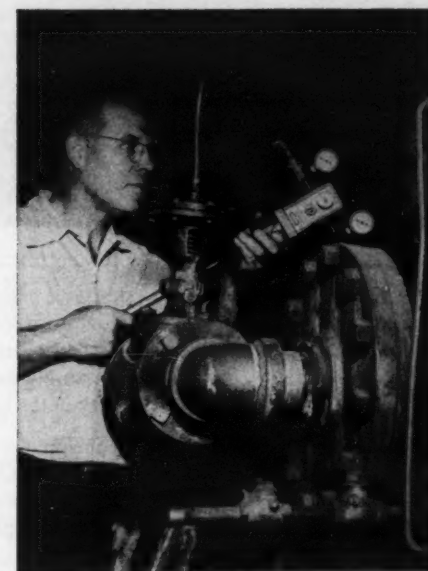
The outstanding behavior of this first pilot is being repeated today by Leslie Pilots in hundreds of other applications in all industries. The wide adjustable ranges (32°-400°F and 300°-600°F) make the pilots adaptable to most operating conditions. The fast-responding bi-metallic element responds to changes as small as ¼°F.

LESLIE CO. 281 Grant Avenue, Lyndhurst, New Jersey

When inquiring check CP 6937 on handy form, pgs. 2-3



DEWITT O. HESSLER, Laundry's President, joins Chief Note in examination of the original Leslie Pilot before reinstallation.



CHIEF NOTE REINSTALLS PILOT after no-cost overhaul. Parts showed no appreciable wear or corrosion after 21 years of continuous hot water heater service.

Send for Technical Data Sheet 464-14 describing Leslie Temperature Pilots and Controllers.



**TOPS IN QUALITY PRESSURE
LEVEL AND TEMPERATURE CONTROLS**
Since 1900

2814

Coleman's Ounce of Prevention Protects Clarity of Schenley Whiskies

Schenley was the first distiller to use the Coleman Photo-Nephelometer for routine testing of whiskey samples from the bottling line. In a recent ad in Time, Schenley said:

"It makes certain that the whiskey will look and taste the same months later as it does at that moment."



Cloudiness or other undesirable cumulative factors in products can often be forecast by haze measurements during production. To detect a faint haze as it forms, an ultra-sensitive instrument is needed. The Coleman Photo-Nephelometer can measure haze at levels far below the ability of the human eye to detect it.

The Coleman Photo-Nephelometer measures light reflected from suspended particles. Used with Coleman Certified Nephelos Standards it constitutes an accurate means for measuring and describing "haze" in terms of simple numbers, easily understandable and readily reproducible.

Any substance which can be isolated as a finely divided precipitate can be measured quantitatively with a Nephelometer. When so used, the instrument is very rapid. It eliminates from the usual gravimetric method the five most tedious steps: filtering, washing, drying, cooling and weighing.

Write for folder — "Nephelometry: A Short Cut to Precision Chemical Analysis".

Dept. D., Coleman Instruments, Inc., Maywood, Ill.



Coleman Nephelometers

*The picture and quotation are reproduced with the permission of Schenley Distillers, Inc.

When inquiring check CP 6938 on handy form, pgs. 2-3

INSTRUMENTATION

Holds speed constant even at low of 50 rpm . . .

magnetic amplifier-speed control uses no tubes

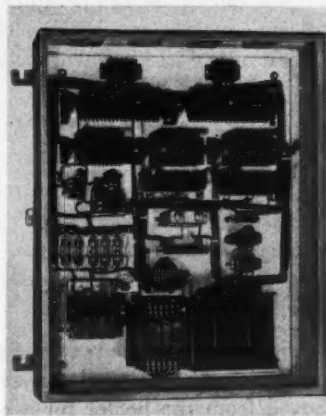
Uses: Provides remote control of speed over very large range. Operator can select exact speed desired.

Features: Torque is constant especially at low speeds.

Description: Magnetic amplifier does not use tubes of any sort. It supplies power to motor so that speed does not drop off when load is applied. This ability to hold speed constant extends to loads of twice rated motor torque.

Components of amplifier are magnetic coils and selenium rectifiers. Indefinite life of these components permits years of operation without serious maintenance. No adjustments need be made, and the drive operates on supply voltages from 200 to 250 volts with no sacrifice in life.

No warm-up period is needed — control is ready for instant start-



Open cabinet shows components of magnetic amplifier

ing. Over-load capacity is high and operation can take place over wide ambient temperature range. Standard model includes a 230 volt DC motor with a speed range of 49 to 2450 rpm and motor is rated at $\frac{3}{4}$ hp (at maximum speed). Dynamic braking is standard. Input is 200-250 volts, 60 cycles single phase. Other input voltages can be accommodated. (Adjustable speed drive Model

AIR POLLUTION



Industry Must Keep Abreast Of Atmospheric Conditions

If you'd like to know how to check weather over your plant . . . day in and day out . . . chances are our experience can help you.

Bendix-Friez offers you all in one package, your own weather station for your own exact location. (The height of your stack, terrain, etc., make a big difference!)

Accurate, meteorological Bendix-Friez instruments tell you the temperature, humidity, windspeed and direction, precisely.

Seventy-seven years of continuous manufacture of precision instruments stands behind your challenge to air pollution.

Offered to you too, is all of Bendix-Friez experience with others that could guide you to the solution of your air pollution problem. Write today.



AEROVANE Indicates and records wind speed and direction. Recognized as "best all-purpose wind measuring instrument yet devised." Readily installed and easily maintained.



HYGRO-THERMOGRAPH The leader in its field. Noted for precise accuracy and long-time dependability. Portable, easy to operate. Widely used in laboratories, factories and offices.

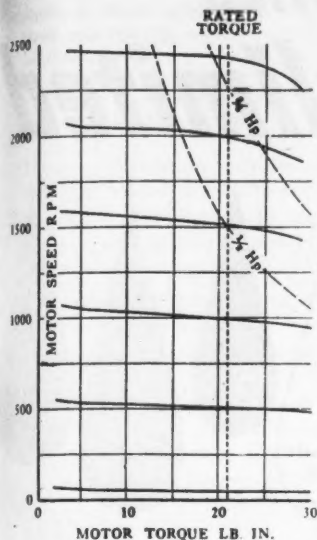
FRIEZ INSTRUMENT
Division of

AVIATION CORPORATION
1450 Taylor Ave., Balto. 4, Md.
EXPORT SALES
Bendix International Division
205 E. 42nd St., New York 17, N.Y. U.S.A.

When inquiring check CP 6939 on handy form, pgs. 2-3

CHEMICAL PROCESSING

INSTRUMENTATION



E-1 is a product of Franklin Control Corp., Dept. CP, 1975 S. Allis St., Milwaukee 7, Wis. . . . or for more information concerning manufacturer's product reader may simply check CP 6940 on handy Reader Service slip which is located between pages two and three.)

Explains features of portable pots

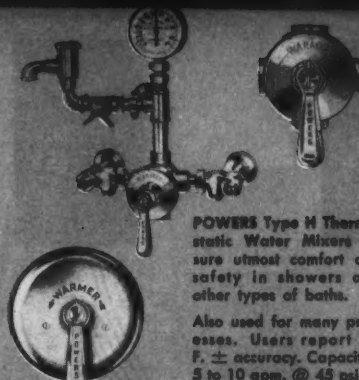
Four-page bulletin covers portable potentiometers with direct reading temperature, millivolt, and extended range scales. Wiring diagrams, instructions, specifications and special features are shown.

Bul 1210 is issued by Industrial Div., Minneapolis-Honeywell Regulator Co., Dept. CP, Wayne and Windrim Avenue, Philadelphia 44, Pennsylvania. When inquiring about manufacturer's product reader may simply specify CP 6941 on the convenient Reader Service slip which is located between pages two and three.

For more information on product at right, specify CP 6942 . . . see information request blank between pages 2 - 3.



Above: **POWERS ACCRITEM** Temperature Regulator, is water or compressed air operated. Controls **FLOWRITE** diaphragm valve (right). Widely used for Water Heaters and Industrial Processes.

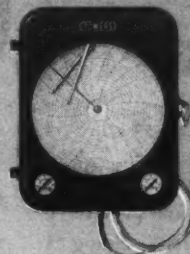


POWERS Type H Thermostatic Water Mixers insure utmost comfort and safety in showers and other types of baths. Also used for many processes. Users report $\frac{1}{2}^{\circ}$ F. \pm accuracy. Capacities 5 to 10 gpm. @ 45 psi.



Powers No. 11 Self-Operating Regulator widely used for water storage heaters, heat exchangers, fuel oil pre-heaters and many industrial processes.

WATER Temperature CONTROL?

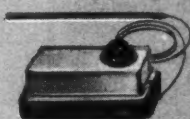


Powers Series 100 Recording Controller, Compressed Air Operated.

POWERS FLOWRITE V-Port-Characterized Diaphragm Control Valve.



Powers Remote Bulb Type D Thermostat for Unit Air Conditioners.

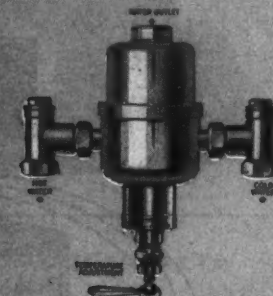


POWERS PACKLESS VALVES

For controlling chilled, or heated water in unit air conditioners. No leakage. No packing maintenance.



Powers MASTROL Control for regulating forced hot water heating systems.



Powers Thermostatic Water Controller for regulating temperature of multiple type showers, hydro-therapy and industrial processes. Capacities 22 to 125 gpm. @ 45 psi.

Call POWERS

Most Complete Line of Controls Made
Only a few are shown here

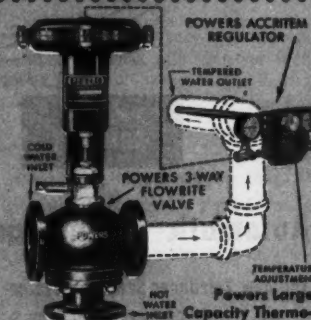
for All Types of Baths, Water Heaters and Heat Exchangers

- Forced Hot Water Heating Systems
- Radiant Panel Heating Systems
- Air Conditioning Units using Chilled and Heated Water
- Cooling Water for Air Compressors, Diesel, Gas Engines, and Cyclotrons
- Many Industrial Processes: Photo Developing, X-Ray, Color and Ordinary Film, Lens Polishing and Grinding, Chocolate Enrobers, Plastic Molding Presses, etc.

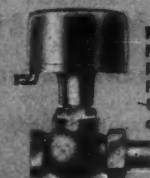
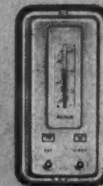
Our More than 60 Years Experience will be valuable in helping you select the right control for your requirements. Contact our nearest office or Write us direct for Condensed Catalog Rb 24.

THE POWERS REGULATOR CO.

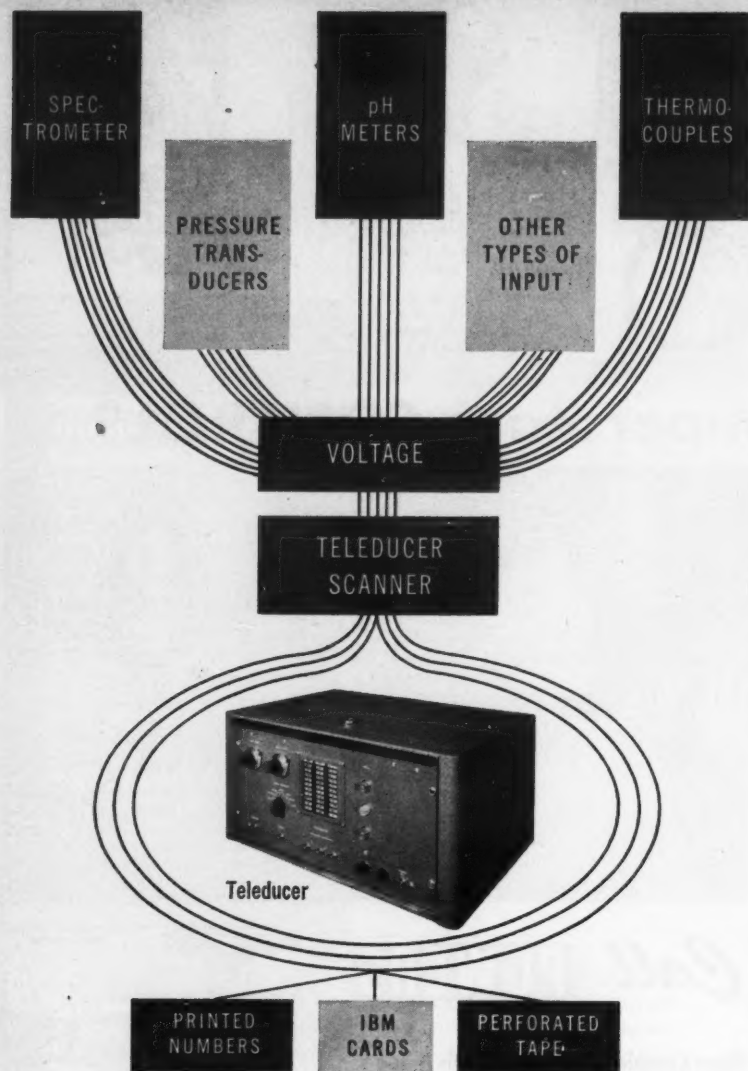
Skokie, Ill. • Offices in Over 50 Cities in the U.S.A., Canada and Mexico



Powers Large Capacity Thermostatic Water Mixing Valve Controlled by an **ACCRITEM** Temperature Regulator. Capacities 20 to 1200 gpm. @ 45 psi.



Powers Room Type Pneumatic Controls for Radiant Heating-Cooling Panels, Convectors and Unit Ventilators. Valves are packless. No more packing maintenance. No leakage.



Automatic scanner and digital recorder...

The new Teleducer Scanning System eliminates high labor costs and human errors from scanning and recording. It gives you accuracy of 0.1%, speeds as fast as one recording operation per second, and readout in decimal numbers.

One Teleducer Scanning System handles from one to 100 channels of input from various sources, reads out in printed numbers, punched cards or perforated tape.

Scanning and recording can be continuous or intermittent, depending on your need.

Specifications will be sent you upon request. Please address inquiries to Preston W. Simms, Dept. CP-3.

TELECOMPUTING CORPORATION

BURBANK, CALIFORNIA • Washington, D. C.

When inquiring check CP 6943 on handy form, pgs. 2-3

INSTRUMENTATION

Shows wide variety of time switches

Illustrated 24-page catalog contains selection and application information as well as descriptions of various time switches, process timers, and time meters. Features, specifications, operating data and prices are included.

Bul GEA-5965 is issued by General Electric Company, Dept. CP, Schenectady 5, N. Y. When inquiring specify CP 6944 on handy form, pages 2 and 3.

Temp control valve has sliding gate

Uses: Direct action temperature control.

Features: Number of wearing parts has been reduced by elimination of guide bushings and pistons.

Description: Unit has sliding gate which moves over the orifice plate assuring positive shutoff. Metallic diaphragm eliminates hazard of ruptures. Control is available in cast iron, bronze, carbon steel, and all castable stainless steel alloys.

(Fig 80 Temperature Control Valve is a product of Jordan Regulator Corp., Dept CP, 1609 Carew Tower, Cincinnati 2, Ohio . . . or for more information check CP 6945 on handy form located between pages 2 and 3.)

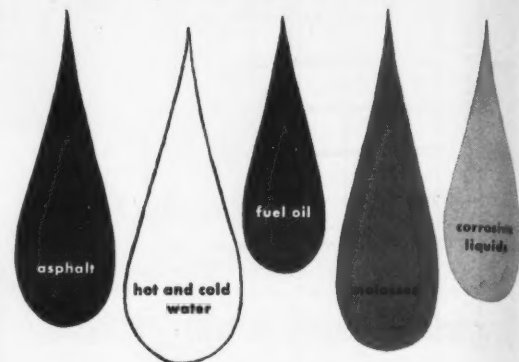
Describes ground resistance, soil resistivity measuring

Illustrated eight-page bulletin presents latest technical data on measuring resistance of man-made grounds—theory, application and methods of soil resistivity measurement. Brief discussion of geophysical prospecting by electrical methods is included.

Description and operating characteristics of eight basic ground resistance measuring instruments plus how-to-use instructions are given.

Bul 1-1 is issued by Associated Research, Inc., Dept. CP, 3758 West Belmont Ave., Chicago 18, Ill. When inquiring specify CP 6946 on handy form, pages 2 and 3.

viscosities unlimited



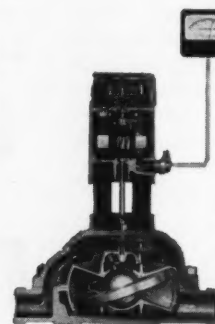
HAYS VERIFLOW METER AND HAYS ELECTRONIC VERITROL indicate and control liquid flow

Now virtually all fluids can be precisely measured and accurately controlled—from a remote position.

Hays VERIFLOW meter accurately measures, indicates, and totals the flow of corrosive and hard-to-meter liquids without using weigh tanks, orifice plates, or gage sticks.

With the Hays VERITROL you simply set a knob at the rate of flow desired . . . then, the VERITROL controls the flow of liquid at that set-rate.

Send for Pub. No. 53-766-38.



for corrosive liquids

Acetic Acid, Aluminum Potassium Sulphate, Ammonia, Calcium Compounds, Carbolic Acid, Formaldehyde, Fruit and Vegetable Juices, Hydrogen Peroxide, Phosphoric Acid, Potassium Hydroxide, Sodium Compounds, Sulphuric Acid (concentrated), Starch Acid, and many others.

Automatic Combustion Control
Boiler Panels • Hays-Penn Flowmeters
Veriflow Meters and Veritrol
Gas Analyzers • Draft Gages
Combustion Test Sets • CO₂ Records
Electronic Oxygen Recorders
Electronic Flowmeters
Electronic Feed Water Controls
Miniature Remote Indicators

hays

CORPORATION

MICHIGAN CITY 34 INDIANA

When inquiring check CP 6947 on handy form, pgs. 2-3

CHEMICAL PROCESSING

**Record three variables,
indicate fourth —
in miniature . . .**

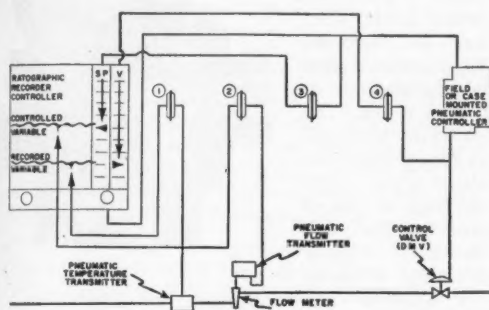
with controller added, unit has all advantages of a loading station

Uses: Miniature recorder is capable of receiving four variables instead of three.

Features: Taking only six inches square of panel space, unit can record three variables and indicate one, or record two and indicate two others.

Combined with standard pneumatic controller, unit offers all advantages of a loading station.

Description: Miniature strip chart recorder uses four-inch rectilinear strip chart available with either electric or pneumatic drive. Recorder con-



Shows miniature recorder handling four unknowns

tinues to function even when pulled forward for examination of internal mechanism. Pneumatic connections are self sealing when recorder is removed from panel mounting.

When combined with pneumatic controller, unit is capable of recording signals from both wild line and controlled line. In addition to this it can indicate set point signal and valve signal. Large external automatic-manual transfer knob and set point knob allow easy adjustment and bumpless transfer. In such an arrangement set point indication is a result of true pneumatic signal tapped from set point pressure regulator pneumatic line to the controller.

(Miniature Ratographic Controller is a development of Fischer & Porter Co., Dept. CP, 13 Jacksonville Rd., Hatboro, Pa. . . or for more information check CP 6948, pages 2 and 3.)

Describes six instruments for high amp testing

Printed in two colors, four-page catalog shows six instruments used in high amperage testing of current actuated devices such as motor starter overload relays, current transformers, etc.

Cat 953 is issued by Multi-Amp Corp., Dept. CP, 121 Cross St., Harrison, N. J. When inquiring specify CP 6949 on handy form, pages 2 and 3.

NOW...

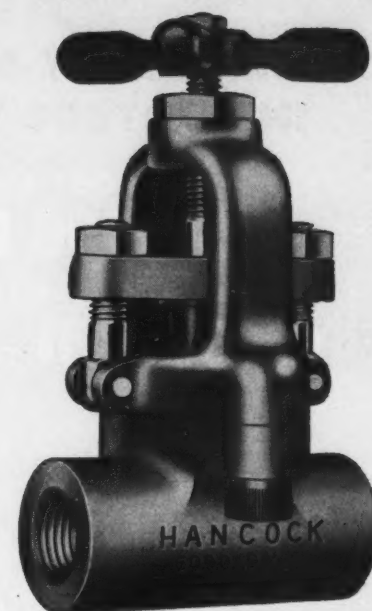
THE 6000# HANCOCK STAINLESS STEEL INSTRUMENT VALVE

A new HIGH PRESSURE valve for use on

INSTRUMENT PANELS	BY-PASS LINES
INSTRUMENT LINES	CORROSIVE LINES
GAUGE LINES	ORIFICE METERS

This heavy-duty Hancock Instrument Valve was specially engineered for these and similar services where high temperatures are of short duration and occur infrequently. It is small, easy to handle—weighs only 2¼ lbs. Space-saving compactness permits close alignment of piping with near structures. The packing gland can be readily pulled tight in close quarters. Disassembly is no problem in tight spots. Every practical use of stainless steel assures maximum protection against corrosion. You can be sure of long-life service and economical maintenance.

YOUR INDUSTRIAL SUPPLY DISTRIBUTOR has the 6000# Hancock Instrument Valve. He is as close as your telephone. Call him for complete specification and operational data. You can count on fast delivery to meet your requirements.



SPECIFICATION DATA

SERVICE RATING: 6000# O.W.G.—100° F.

TYPES: Globe and angle.

SIZES: ¼", ¾" and ½".

CONNECTIONS: Screwed and socket weld ends.

BODY: Type 410 forged stainless steel with integral stuffing box.

YOKE: Forged carbon steel—bolted to body with two hollow head alloy steel cap screws removable with Allen-type wrench. No bonnet joint—no gasket to leak or blow.

STEM: 300 Brinell stainless steel with bronze stem thread bushing.

STEM-DISC: Needle point design.

SEAT: Type 410 stainless steel. Integral with the body.

PACKING GLAND: Forged steel. Packing gland bolts, nuts, pins and packing stop rings—stainless steel.

PACKING: Highest quality long fiber asbestos, graphited and corrosion inhibited.

HANDLE: Malleable iron. Three-prong type for easy operation. Handle nut—steel.

MARKER PLATE: Stainless steel.



When Hancocks go in, valve costs go down

HANCOCK VALVES

A product of **MANNING, MAXWELL & MOORE, INC.** Watertown 72, Massachusetts

MAKERS OF 'HANCOCK' VALVES, 'ASHCROFT' GAUGES, 'AMERICAN' INDUSTRIAL INSTRUMENTS, 'CONSOLIDATED' SAFETY AND RELIEF VALVES, AIRCRAFT PRODUCTS. BUILDERS OF "SHAW-BOX" AND 'LOAD LIFTER' CRANES, 'BUDGIT' AND 'LOAD LIFTER' HOISTS AND OTHER LIFTING SPECIALTIES.

When inquiring check CP 6950 on handy form, pgs. 2-3

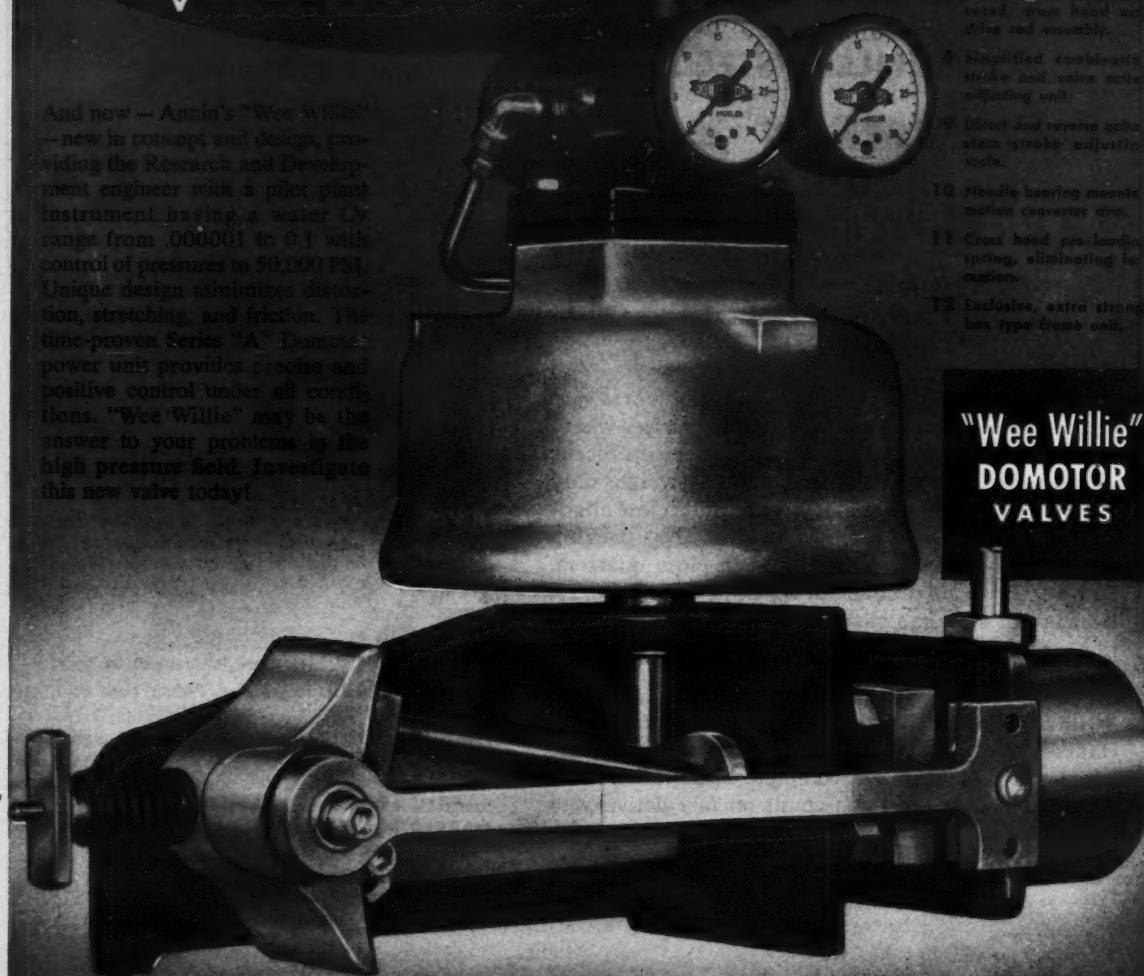
AVAILABLE — A COMPLETELY NEW CONCEPT IN CONTROL VALVE DESIGN

BODY RATING TO
50,000 PSI
FLOW RANGEABILITY
C_v.000001 TO 0.1

And now — Annin's "Wee Willie" — new in concept and design, providing the Research and Development engineer with a pilot plant instrument having a water C_v range from .000001 to 0.1 with control of pressures to 50,000 PSI. Unique design minimizes distortion, stretching, and friction. The time-proven Series "A" Domotor power unit provides precise and positive control under all conditions. "Wee Willie" may be the answer to your problems in the high pressure field. Investigate this new valve today!

- 1 Substantial forged valve body (wide selection) only body.
- 2 Sealed off shafts, seal removable, flat disk valve seat.
- 3 Direct positive seal, not taking to valve seat on motion.
- 4 Hard chrome-plated, or gas finished valve seat with sealite plug.
- 5 Heavy "Super YO" stem and assembly.
- 6 Thumbrot valve stem locking unit.
- 7 Removable lifetime leak tested cross head and drive and assembly.
- 8 Simplified pneumatic stroke and valve action adjusting unit.
- 9 Direct and reverse action stem stroke adjustment scale.
- 10 Needle bearing mounted motion converter drive.
- 11 Cross head pre-loading spring, eliminating leakage.
- 12 Exclusive, extra strong box type frame unit.

"Wee Willie"
**DOMOTOR
VALVES**



ANNIN
Control VALVES

Write today for bulletin No. 50WW
for complete information and engineering
data on "Wee Willie"

THE ANNIN COMPANY
4578 E. TROBHAM ROAD, CHICAGO, ILL. 60632
100 ANHOLD ST. CHICAGO, ILL.

When inquiring check CP 6951 on handy form, pgs. 2-3

INSTRUMENTATION

Alarm sounds at low flows — and at high ones . . .

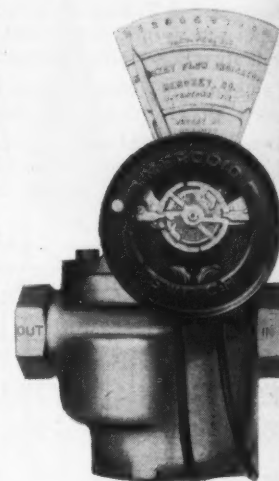
flow alarm combines electrical signal with visual indication at measurement site

Indicating flow meter provides accurate control of free flowing liquids. Its three moving parts provide visual indication of 0 to 100 per cent flow and also provide an electric signal which can be used with visible or audible alarms when flow exceeds preset maximum or minimum limits.

Sealed-in unit is protected from dirt, dust, and corrosion. Pre-determined flow is quickly set on face of switch. This sealed-in Mercoid switch provides an alarm signal when the high or low of pre-determined flow has been reached. Accuracy is about 3%. Controls can be set over full range.

According to manufacturer, pitting and sticking are completely eliminated so that instrument is failure-proof.

(Automatic Indicating Flowmeter has been developed by The Henszey Co., Dept. CP, Watertown, Wis. . . . or for more information check CP 6952 on handy form, pages 2 and 3.)



"Precision" load cells can reduce error to 0.01% . . .

similar to standard models, they range in capacity from 500 to 200,000 lb

Uses: Similar in appearance and operation to manufacturer's SR-4 bonded resistance wire strain gage, "precision" and "extra precision" load cells



Left: 500 and 100,000 lb tension cells. Right: 500 and 200,000 lb compression cells

INSTRUMENTATION

can be used for measuring force and weight. Two types available are designed for compression and tension.

Features: Both high-precision types are mechanically and electrically interchangeable with standard cells, but "extra-precision" load cells have calibration accuracy within $\pm 0.10\%$ of full scale.

Description: High-precision load cells are built in 18 types for compression. These cover nine capacities ranging from 500 to 200,000 lb. Tension load cells of 16 types cover eight capacities ranging from 500 to 100,000 lb. Though nominal electrical resistance is the same as standard load cells (120 ohms), recently developed precision types have finer tolerances and are temperature-compensated.

Calibration accuracy of the "extra precision" cells at 65°F is 0.10% compared with 0.25% for standard cells. Temperature effect between 15 and 115°F is within $\pm 0.0008\%$ per °F.

"Precision" load cells have an intermediate calibration accuracy of $\pm 0.15\%$ at full scale output.

Highest accuracy.—attained with "extra precision" load cell and instrument—can hold overall error to as little as 0.01% full scale. To do this, cell calibration error and cell non-linearity are compensated in instrument circuits.

("Precision" and "extra precision" Type SR-4 load cells are manufactured by Baldwin-Lima-Hamilton Corp., Dept. CP, 940 Simpson St., Eddystone 42, Pa. . . . or for more information check CP 6953 on handy Reader Service slip located between pages two and three.)

Shows temperature and transmits air signal . . .

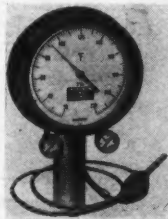
composite range of -40 to 1000°F is attained

Uses: Suitable for unprotected outdoor operation, transmitter produces 3 to 15 psig signal and also indicates temperature at sight of measurement.

Features: Since indicator is positioned at transmitter, long lengths of capillary tubing are not needed. Unit mounts directly on 2" pipe, wall bracket, or panel.

Description: Dial thermometer has been combined with pneumatic transmitter. Combined unit employs mercury-filled thermal system over the composite range from -40 to 1000°F . Evenly-graduated 8" diam scale is used. High variety of bulbs and sockets can be furnished.

(Indicating temperature transmitter is a product of Penn Industrial Instrument Corp., Dept. CP, Penn Bldg., 4110 Haverford Ave., Philadelphia 4, Pa. . . . or for more information check CP 6954 on handy form, pages 2 and 3.)



Here's a *Real* STEAM TRAP PACKAGE

WANT FAST HEAT-UP OF OFF-AND-ON PIPE COILS, HEADERS, UNIT HEATERS, ETC.?

Speed heat-up with Armstrong thermic bucket traps. When steam is first turned on, air is pushed out the large thermic vent—fast! As soon as steam reaches the trap a thermic strip closes the vent, then the bucket functions as a regular bucket. Traps with thermic vent buckets discharge air 50 to 100 times faster than other traps.

NEED A CHECK VALVE AHEAD OF TRAP?

Just specify Armstrong with internal check valve. No check valve installation labor or fittings needed. Spring loaded action and vertical position minimize danger of dirt holding valve open. The Armstrong internal check valve is top quality—long lasting.

NEED A STRAINER AHEAD OF TRAP?

Save money with Armstrong built-in strainer traps. They cost less than a separate trap and strainer and save installation time and money. Stainless steel screen lasts a long time.

Get the full facts about all Armstrong traps. Send today for free Catalog J, The Armstrong Steam Trap Book.

ARMSTRONG MACHINE WORKS
880 Maple Street • Three Rivers, Michigan

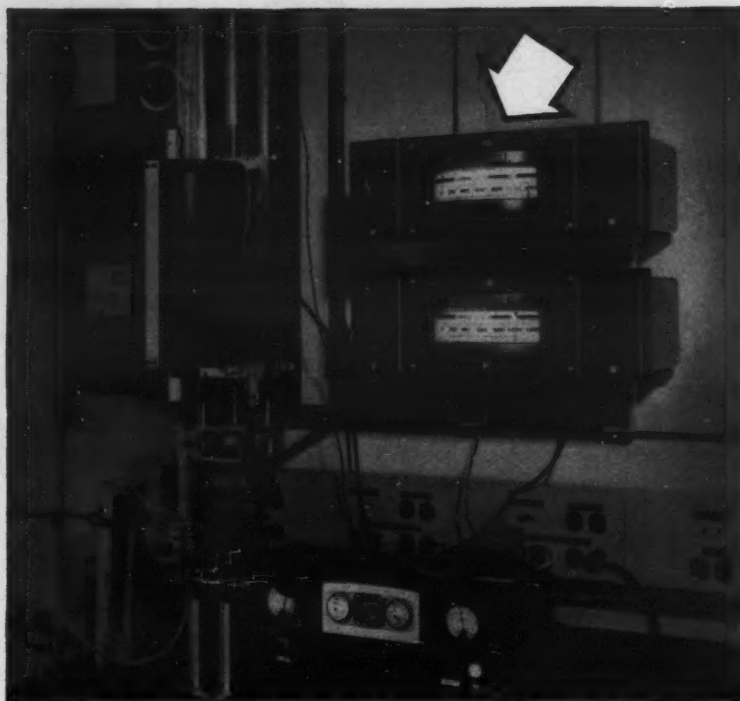


ARMSTRONG STEAM TRAPS

When inquiring check CP 6955 on handy form, pgs. 2-3



Wheelco Controllers



...regulate furnaces for purification of germanium at RCA.

At Radio Corporation of America, Laboratories Division, Wheelco Capacitrols help produce high-quality germanium ingots through close control of furnace temperatures. With built-in Capaciline . . . which "anticipates" heating needs . . . they minimize "on-off" variation above and below setting, enforcing "hairline" accuracy. For a finely calibrated indicator and precise controller for temperature, voltage, current, speed, and other process variables . . . with simple plug-in assemblies for fast, easy servicing . . . specify Wheelco Panelmount Capacitrols. Read about the Capacitrol "electronic" principle in Bulletin PC-2.

BARBER-COLMAN COMPANY, DEPT. C, 1520 ROCK ST., ROCKFORD, ILLINOIS
Industrial Instruments • Automatic Controls • Air Distribution Products • Aircraft Controls • Small Motors
OVERdoors and Operators • Molded Products • Metal Cutting Tools • Machine Tools • Textile Machinery

When inquiring check CP 6956 on handy form, pgs. 2-3

INSTRUMENTATION

Tension of wires, tapes checked while running

Uses: To check tension of wires, tapes and films while running.

Features: Gear train and other components have been eliminated.

Description: Tension meter covers capacities of up to 20 lb. It is designed to accommodate ball bearing rollers of any reasonable width so as to measure tension of rayon tows, similar materials to 2" wide.

(Saxl Tension Meter is a product of Tensitron, Inc., Dept. CP, Harvard, Mass. . . . check CP 6957 on handy form, pages 2 and 3.)

Unit serves as thermostat, overheating alarm . . .

controls surface temperatures to 550°F

Uses: For controlling surface temperatures on heated plastic dies, melting pots, etc. Also may be used as limit switch or alarm to control overheating.

Features: Strip construction is such that thermal responding element is insulated from the switch and carries no current.

Description: Made in brass or steel, unit is set to any temperature by rotating self-locking adjustment screw. When varying temperature control is desired, adjustment shaft and knob can be provided. Rating is 1500 watts, 115-230 volts AC. Operating temps to 550°F.

(Model HS (adjusting screw) and model HK (adjusting knob) thermostats are products of George Ulanet Co., Dept. CP, 416 Market St., Newark 5, N.J. . . . check CP 6958, pages 2 and 3.)

Shows hair hygrometers, related instruments

Industrial hair hygrometers, thermometers, recorders, and recording controllers are described in four page bulletin.

Bul 6504 is issued by Minneapolis-Honeywell Regulator Co., Industrial Div., Dept. CP, Wayne and Windrim Ave., Philadelphia 44, Pa. Specify CP 6959, pages 2 and 3.



Tricky load measurement problems?

Taylor Volumetric Load Measuring Elements provide a simple, economical means of directly measuring load or force, such as the tension on a conveyor belt, the thrust on a bearing, "nip" pressure on processing rolls, or the weight of solids or corrosive liquids in a tank for example.

There are four different types of rugged, self-contained units, to fit all requirements. The measurement is read directly on the chart or scale of a recording or indicating instrument.

Illustrated above is the Spool Type Element, designed for measuring either tension or compression loads or a combination of both. The range limit for compression loads is 0-240,000 lbs., maximum load not to exceed 400,000 lbs. Tension loads can be measured from 0-30,000 lbs.

For full details call your Taylor Field Engineer, or write for Bulletin 98232. Taylor Instrument Companies, Rochester, N. Y., or Toronto, Canada.

Taylor Instruments
MEAN ACCURACY FIRST

When inquiring check CP 6960 on handy form, pgs. 2-3

BULLETIN 194-SA

CAMBRIDGE SURFACE PYROMETERS

In many industrial cases temperature variations demand continuous knowledge of the temperature of working surfaces. To meet this requirement, Cambridge Surface Pyrometers have proved invaluable to thousands of plants throughout the world.

Almost instantaneous in action, these accurate thermodynamic instruments indicate the temperature of flat and curved surfaces, still or moving, within one's grasp or best to reach. They show the surface temperature of solid surfaces or of molten surfaces of almost any material. They measure the sub-surface temperature of materials in a plastic or semi-plastic state.

Cambridge Surface Pyrometers maintain temperature measurements in today and tomorrow. Designed for years of operation. They are rugged, they only require laboratory accuracy—light is made easy to use. Thousands are giving satisfactory service after 20 years' constant use. Improving quality and saving costs.

CAMBRIDGE INSTRUMENT COMPANY, INC.
Pioneer Manufacturers of Precision Instruments
Grand Central Terminal New York 17, N. Y.

Cambridge Surface Pyrometers are lightweight, portable instruments — accurate but rugged — for measuring temperature of mold cavities and flat surfaces, still or moving rolls, and within-the-mass temperature of materials in a plastic or semi-plastic state. Write for Bulletin 194-SA; 33 illustrations, many applications.

CAMBRIDGE INSTRUMENT CO., INC.
3706 Grand Central Terminal, New York 17

PIONEER MANUFACTURERS OF PRECISION INSTRUMENTS
When inquiring check CP 6961 on handy form, pgs. 2-3

CHEMICAL PROCESSING

INSTRUMENTATION

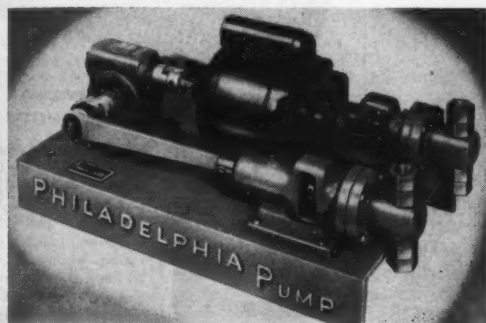
Remove all moving pump parts without breaking piping connections . . .

controlled volume pump is designed for ease of maintenance

Uses: Low-capacity, high pressure, reciprocating plunger pump can be used wherever precise flows or proportioning need to be taken care of.

Features: Despite adjustable capacity, all moving pump parts can be removed without breaking piping connections to the pump.

Description: Controlled volume proportioning pump is constructed to allow removal of parts through cross head. Packing gland is open at both ends to simplify replacement of packing and assure even take-up on the packing. Grease lan-



Capacities from 5 cc to 128 gph

tern ring is readily changed to water seal for handling suspended solids or corrosives. Pump can be used in single, dual, or multiple combinations.

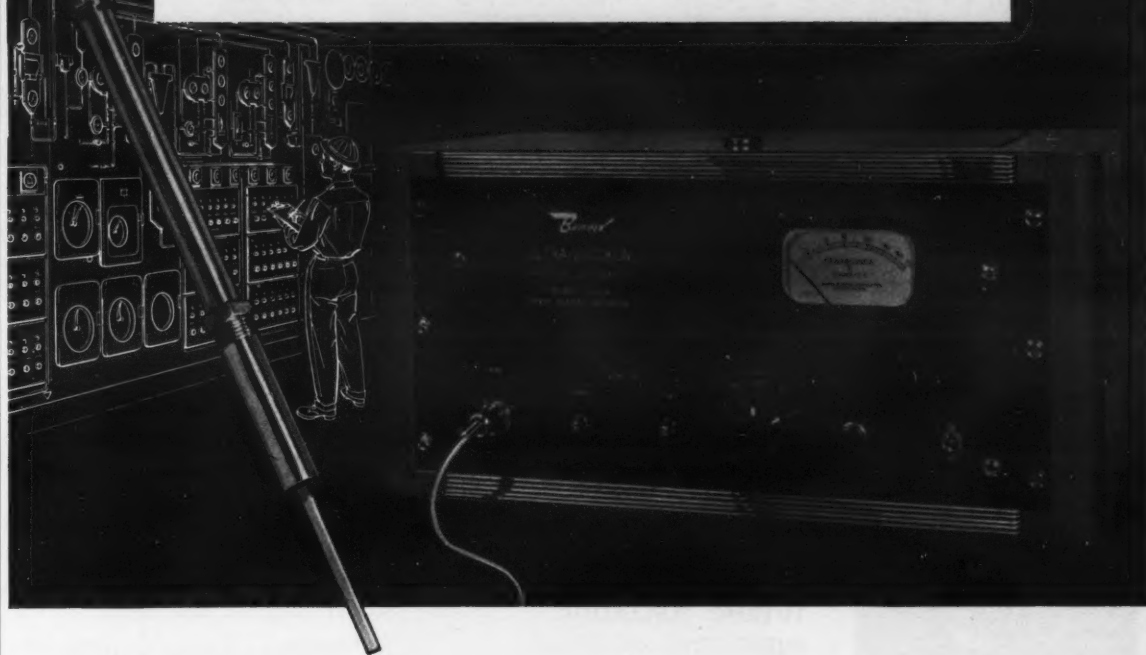
Top suction and both discharge valves are spring loaded. Valves are machined from stainless steel — eliminating pressed seats. Valve balls are also stainless. Special materials of construction for both valve and pump body are available. Conventional screw and rocker arm micrometer adjustments of stroke length are available. Manual, pneumatic, hydraulic, or electrical control of stroke length while pump operates is possible.

Minimum capacity of smallest pump is 5 cc per hour and maximum capacity of largest pump is 128 gallons per hour. Pressure ranges to 20,000 psi are available.

(Controlled Capacity Pumps are products of Philadelphia Pump and Machinery Co., Dept. CP, Wynnewood, Pa. . . or for more information check CP 6962 on handy form, pages 2 and 3.)

Convert mass rate to flow rate in a flash!
Handy nomograph is on page 188

BENDIX ULTRA-VISCOSON



measures, records and controls viscosity instantly, continuously, automatically!

This unique electronic instrument—the Bendix Ultra-Viscoson—provides instant, continuous and automatic viscosity measurement of hundreds of fluid materials in any stage of processing. All you do to get an accurate viscosity check is look at the dial. And all you do to install it is insert the small, rugged probe—by means of threaded connections—in a pipeline, kettle, pressure vessel, fractionating tower or tank.

In addition to indicating viscosity, the Bendix Ultra-Viscoson can be connected directly to any standard recorder or recorder-controller to automatically record and control viscosity in continuous processes.

You'll realize substantial savings, too, with a Bendix Ultra-Viscoson on the job. It completely eliminates costly work stoppage, sample taking, lengthy laboratory analyses and human error. Find out how you can improve your operation with a Bendix Ultra-Viscoson. Write today for complete information.

Simple ... Flexible ... Reliable!

No moving parts • Hermetically sealed probe • Operates in temperatures up to 650°F. and pressures of 1000 p.s.i. (special units available for higher pressures) • Measures in milliseconds • Remote operation • Permanently installed probe • Easily combined with remote recorder and automatic controls • Multi-probe and automatic temperature compensating systems available

FOR FULL
PARTICULARS
WRITE TO

CINCINNATI DIVISION OF

203 W. 3rd Street, Cincinnati 2, Ohio

Export Sales: Bendix International Division, 205 East 42nd St., New York 17, N. Y.



When inquiring check CP 6963 on handy form, pgs. 2-3

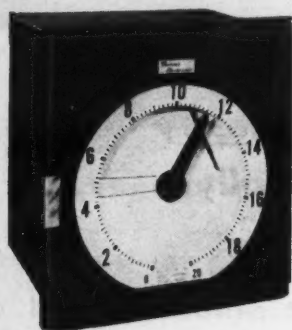


HOW COME YOU
LOOK HAPPY?

THERMO ELECTRIC
PYROMETERS
SOLVED MY PROBLEMS.



Thermo Electric makes many products that help solve problems in the field of temperature measurement and control. T-E controllers and indicating-recorders are good examples. They are both made in two types: potentiometer pyrometer and resistance thermometer. They are accurate ($\pm 1/4$ of 1% of the range), rugged, simple in design, easy to maintain. Ranges from -100° to $+600^{\circ}\text{F}$ up to 0 to 3000°F .



THERMO ELECTRONIC INDICATING-RECORDER

Only three moving parts in the recording system—pen arm is driven from a cam, which permits linear charts to be used for all temperature measurements—full scale pen travel only 4 seconds. Easily adapted to measure humidity, solution conductivity, speed, pH, direct current, DC voltage, or other variables.

THERMO ELECTRONIC CONTROLLER

Two-position control action is continuous and instantaneous—potentiometer pyrometer type is sensitive to changes of as little as $\pm 1.5^{\circ}\text{F}$, or less; resistance thermometer type is sensitive to changes of as little as $\pm 0.1^{\circ}\text{F}$.

Write for details:

controller, potentiometer pyrometer type, bulletin 50—R controller, resistance thermometer type, bulletin 55—R indicating-recorder, both types, bulletin 60—R

Pyrometers • Thermocouples • Protection Tubes • Quick-Coupling Connectors
Thermocouple and Extension Wires • Resistance Bulbs • Connector Panels

Thermo Electric Co., Inc.

SADDLE RIVER TOWNSHIP, ROCHELLE PARK POST OFFICE, NEW JERSEY
IN CANADA—THERMO ELECTRIC (Canada) Ltd., BRAMPTON, ONTARIO

When inquiring check CP 6964 on handy form, pgs. 2-3

INSTRUMENTATION

Air valve for on-off control of pneumatic systems detailed

Engineering bulletin describes in detail the wobble-rod air valve. "Wobble-rod" refers to lever which opens and closes the valve. It permits valve operation through direct linkage to rotating, oscillating, toggle, lever, slotted or straight thrust linkage. Bulletin evaluates special features and illustrates application ideas for the valve. Photos of the valve in use in cam-actuated mechanisms, sectional drawings and engineering data are included.

Bul 61861 is issued by Pantex Manufacturing Corp., Dept. CP, P.O. Box 660, Pawtucket, Rhode Island. When inquiring specify CP 6965 on handy form, pages 2 and 3.

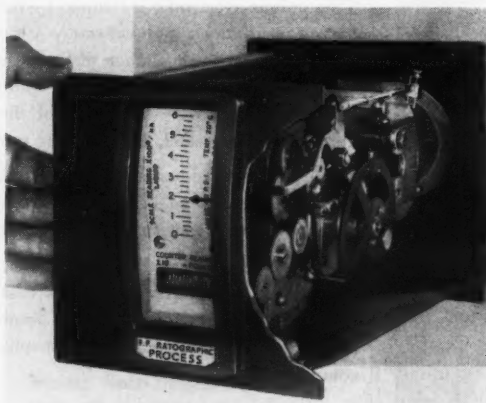
Six by six inch miniature incorporates full size integrator . . .

five-digit counter samples flow rate every 2.5 seconds, indicator shows rate

Uses: Pneumatically operated receiver indicates and integrates flow signals.

Features: Unit takes panel space of six by six inches, is $14\frac{5}{8}$ inches deep.

Description: Full size integrating mechanism and standard 5-digit counter are employed in flow integrator. Instantaneous flow rate is continuously indicated. High speed integrating unit senses and totals flow rate of measured liquid or



Instrument operates on 3-15 psig signal

gas every 2.5 seconds. This counting rate of 24 times per minute allows bearing flows to be totalized with accuracies within 1 per cent of full scale. Totalizer sensitivity is also high enough to take advantage of full sensitivity of flow rate meters.

Instantaneous rate is indicated on vertical strip by pointer connected with integrator calibration cam. The pointer is positioned by pneumatic

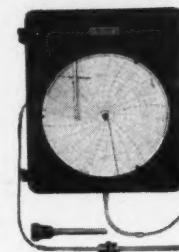


4 1/2" DIAL THERMOMETERS

Made in 3 types to suit any requirements. Rigid stem, wall or flush mounted, 11 inches of scale reading. Interchangeable with standard industrial separable sockets. Stem can be placed at any angle and case can be rotated to any readable position.



RECORDING THERMOMETERS



Twelve inch die-cast aluminum case with black or white wrinkle or satin finish. Single or multiple pen construction. Electric or spring wound clock, 24 hour or 7 Day Revolution. Flexible Armor and bulb of stainless steel. Ranges -40 to $+950^{\circ}\text{F}$ or Equivalent in $^{\circ}\text{C}$.

INDUSTRIAL THERMOMETERS

Red-Reading Mercury—Extruded brass case—chrome finish. Ranges -40 to $+950^{\circ}\text{F}$ or Equivalent in $^{\circ}\text{C}$.

RED-READING MERCURY LABORATORY THERMOMETERS

Thoroughly annealed for permanent accuracy. Complete line A.S.T.M. and fractional division types.

FOR COMPLETE INFORMATION
WRITE FOR CATALOG 200 G

PALMER

THERMOMETERS, INC.

Cincinnati 12, Ohio • MEtrovac 1500

When inquiring check CP 6966
on handy form, pgs. 2-3

CHEMICAL PROCESSING

INSTRUMENTATION

receiver operating at signal pressures from 3 to 15 psig. Entire totalizing mechanism is oil-immersed to protect it from dirt as well as for lubrication.

In order to provide precise timing for integrator, heavy duty 100 rpm synchronous motor is used. Low motor speed leads to simple design because delicate high-speed gear trains are eliminated. Instrument may be combined with impulse-type counter to operate shutoff or other control devices after a certain flow has been measured.

(Ratographic flow integrator is a development of Fischer & Porter Co., Dept. CP, 15 Jacksonville Road, Hatboro, Pa. . . . when inquiring specify CP 6967 on handy form, pages 2 and 3.)

Stainless construction lets meter work with acid . . .

ammonia, caustic, sulfuric, other corrosives work smoothly in all-316-stainless unit

Uses: Provides accurate volumetric measurement of corrosive liquids including caustic soda, concentrated sulfuric acid, other common acids, ammonia, fruit juices, and so forth.

Features: All parts exposed to liquid are 316 stainless steel. Sole exception to this is measuring piston which is made of hard carbon and can be furnished in other materials if desired.

Description: Wide variety of registers are available for both continuous and batch measurement purposes. Manual automatic control may be employed. Modified and improved design of meter continues to employ displacement principle. Meters



Uses hard carbon piston for volume measurement

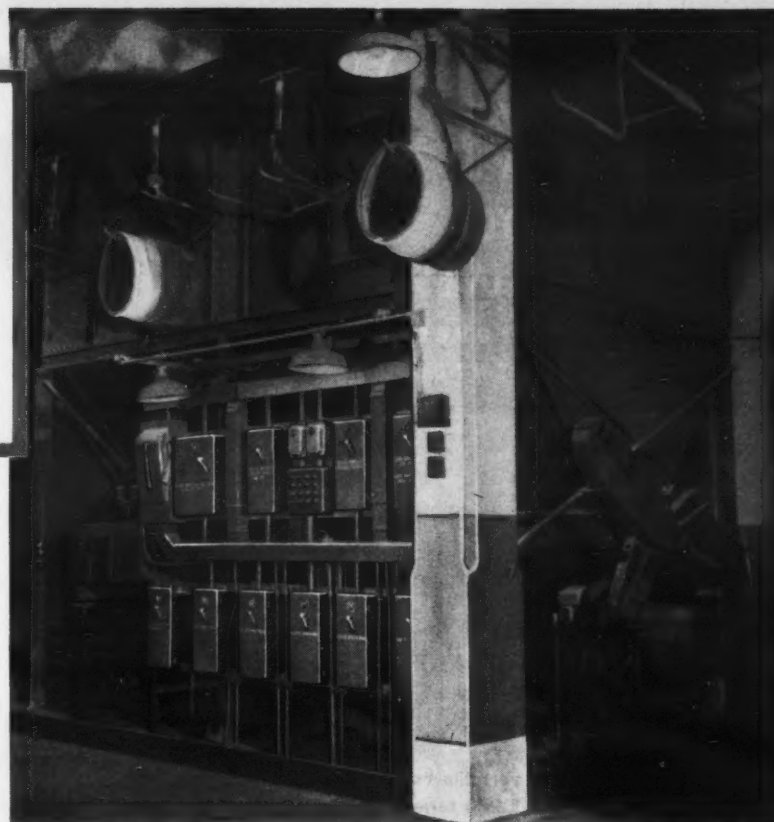
have been employed in measuring distilled water and other cases where product purity is important.

(Stainless Volumetric Meter is a product of Buffalo Meter Co., Dept. CP, 2892-P Main St., Buffalo 14, N. Y. . . . check CP 6968, pages 2 and 3.)



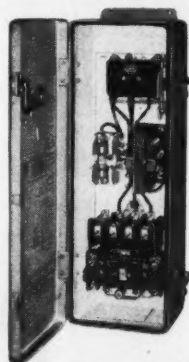
THE SIGN OF QUALITY
IN MOTOR CONTROL

Dracco multibag dust arrester



Machine is used for collecting dust from an automatic tire-dusting machine and returning the dust into process. Note the numerous Allen-Bradley controls.

... equipped with ALLEN-BRADLEY TROUBLE FREE COMBINATION MOTOR STARTERS



Bulletin 712 Automatic Combination Starter in a NEMA Type 12 Enclosure for protection against dirt and oil.

Here are the "Plus Values" which you obtain "free" when you install Allen-Bradley solenoid control:

1. The simple, time-tested, and maintenance free design is your guarantee of millions of trouble free operations.
2. The straight up-and-down motion of the solenoid plunger is frictionless—it cannot "stick" closed.
3. There are no troublemaking pins, pivots, bearings, or intricate linkages to corrode and fail in operation to cause annoying trouble.
4. Allen-Bradley double break, silver alloy contacts require no maintenance.

For reliable day-in and day-out control performance, it will pay you to specify Allen-Bradley controls—they're Quality control.

Incidentally, enclosures are available for every operating condition.

Allen-Bradley Co., 104 W. Greenfield Ave., Milwaukee 4, Wis.

—Here are some more features that distinguish Allen-Bradley Starters.



Maintenance Free
Double Break
Contacts



Reliable Motor
Overload
Protection



Easy to Install,
White Interiors,
"Bonded"



Easy to Add
Auxiliary
Contacts



Safe Enclosures
for all
Applications

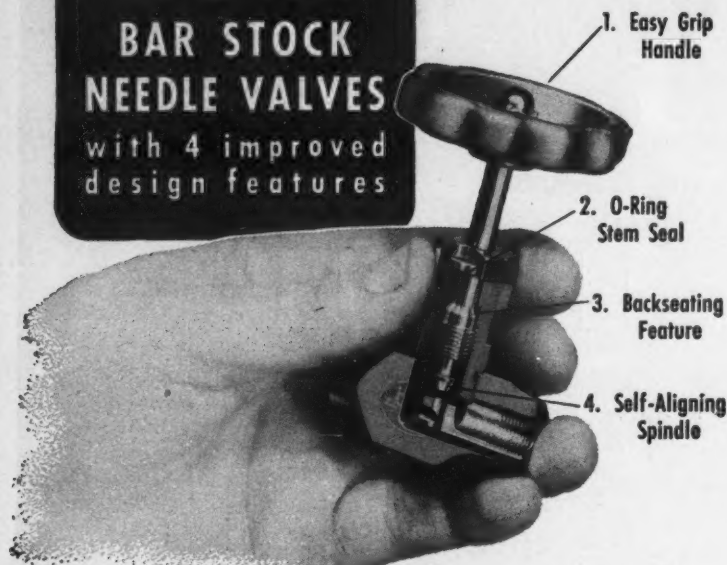
ALLEN-BRADLEY
SOLENOID MOTOR CONTROL

QUALITY

When inquiring check CP 6969 on handy form, pgs. 2-3

NEW

HOKE BAR STOCK NEEDLE VALVES with 4 improved design features



The newest and most versatile bar stock needle valve now available—that's the HOKE 270 series for instrumentation, test panel and hydraulic service. The O-ring stem seal provides maximum tightness and eliminates packing adjustments. (Conventional packing is available, however, if desired.) An important new advantage is the backseating feature that permits O-ring or packing replacement under pressure, without shutting down. A self-aligning spindle has been designed to insure tight seating with minimum wear. The easy-grip handle is of die-cast anodized aluminum, with no sharp edges. An additional feature makes possible direct instrument panel mounting. These new bar stock valves are now available in sizes from 1/8" to 1/2" pipe — straight and angle patterns — manufactured from brass, Type 316 or 430F stainless steel. O-ring styles can be helium leak tested for use in non-critical high vacuum service.

Write for the New Hoke Catalog

This completely illustrated 68-page catalog contains specifications on needle valves of all sizes as well as toggle valves, special purpose valves, fittings and accessories. Tell us about your problem and we will gladly send you a copy of the catalog with our specific recommendations. Address your request to 145 S. Dean Street, Englewood, N. J.

HOKE

**HOKE
INCORPORATED**
Fluid Control Specialists
ENGLEWOOD, NEW JERSEY

When inquiring check CP 6970 on handy form, pgs. 2-3

INSTRUMENTATION

Explains 1% accuracy of recorder

Informative 8-page technical bulletin explains operation of manufacturer's electronic recorder. It particularly emphasizes simplified design, accuracy to $\pm 1\%$, and self-starting operational energy sources.

Tektolog Bul is issued by Fielden Instrument Div., Robertshaw-Fulton Controls Co., Dept. CP, 2920 North Fourth St., Philadelphia 33, Pa. When inquiring specify CP 6971 on handy form, pages 2 and 3.

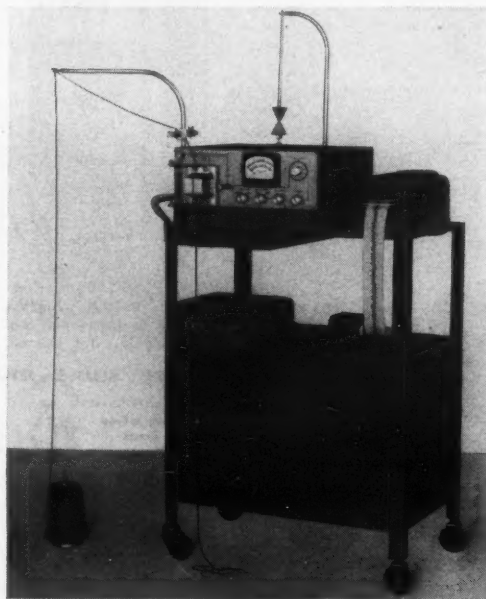
Checks uniformity of yarn . . .

electronic operation packs hours of tests into seconds — produces graphic record

Uses: Measures and records variations in weight per unit length of yarn. Originally designed for cotton yarns, instrument can also be used with wool, nylon, rayon, and other synthetics.

Features: While yarn is run through tester at a high rate of speed, actual tests have shown that results compare well with weight measurements made on small sections of the yarn.

Description: Yarn, roving, and sliver can be measured for uniformity with this instrument. Electronic unit makes permanent record of irregularities in weight per unit length and gives reproducible results. Yarn is run at high speed between two blocks which are electrodes in dielectric measuring circuit. Variations of yarn

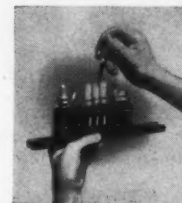
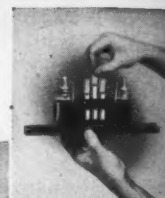


Yarn can be seen running between blocks of dielectric circuit at upper left

Make Accurate pH, CHLORINE TESTS

This simple way

A. Fill three test tubes with sample to be tested and place them in base.



B. Add reagent to middle tube only.

C. Place color standard on base, move across until colors match and . . .



THERE'S THE VALUE using . . .

TAYLOR COMPARATORS with GUARANTEED COLOR STANDARDS

Taylor Comparators give you accurate pH, chlorine, phosphate or nitrate determinations . . . quickly . . . using these three simple steps. Best of all, Taylor Liquid Color Standards carry an unlimited guarantee against fading, thus, there's no chance of mechanical inaccuracy.

Taylor sets are lightweight, strong, and compact. You can carry them with you in the plant to avoid the annoyance of carrying test samples to the lab.

Many different slides can be used on the same base. All color standards for any one determination are housed in one slide . . . no fragile single standards to handle.



FREE HANDBOOK
"Modern pH and Chlorine Control" illustrates and describes complete Taylor line as well as theory and application of pH and chlorine control. Write for your copy. Or, see your dealer for Taylor sets.

W. A. TAYLOR AND CO.
YORK & ROGERS FORTRESS RD. • BALTIMORE, MD.

When inquiring check CP 6972 on handy form, pgs. 2-3

CHEMICAL PROCESSING

weight change capacity of the circuit and are reflected in high speed oscillograph record. Yarn is touched only by guide eyelets and feed rolls. It is not compressed or distorted. With use of rewinding equipment yarn may be subjected to further testing or put back into production.

(Model BL-314-A Uniformity Analyzer is a product of Brush Electronics Co., Dept. CP, 3405 Perkins Ave., Cleveland 14, Ohio . . . or for more information concerning manufacturer's product, reader may simply check CP 6973 on handy form located between pages 2 and 3.)

Solenoid powers pump with transparent head . . .

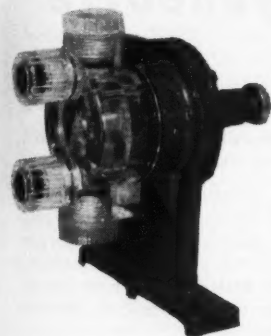
tiny unit used for low rate feeding, proportioning, chlorinating

Uses: Small diaphragm pump is used for controlled rate feeding, intermittent controlled rate feeding, proportional flows and for hydraulic pulse feeding.

Features: Power for the pump is supplied through a special power supply which energizes a solenoid.

Description: Molded plastic is used to provide a transparent pumping head so that operation and valve action can be watched. Tubing connections are slipped on through molded fittings. Solenoid power pack can be furnished with a constant rate contactor to provide any pre-determined feeding rate within pump's range.

Fabric reinforced Neoprene diaphragm is actuated by impulse to solenoid. Feeder is capable of enough suction head to lift material from the carboy or container and it can



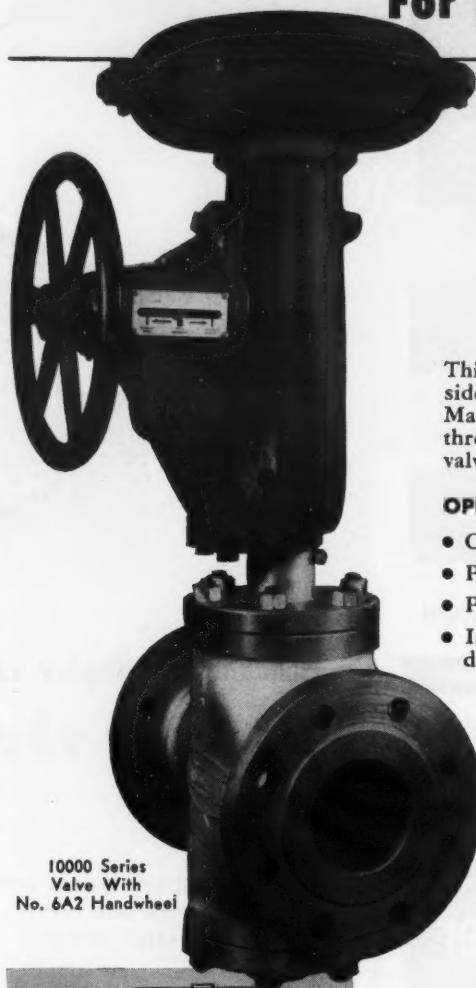
Portion of steel rule shows actual size of pump

inject chemical into water main under pressures up to fifty pounds. If frequency of power pulses are established by meter in the main line, feeder will proportion chemicals to main line flow.

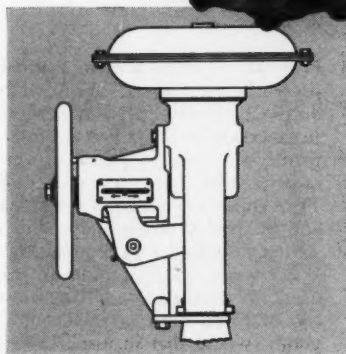
Specifically designed for water treating chemicals — hypochlorites, alum, soda ash, ferric chloride and Calgon — this plastic head pump should not be used with organic chemicals such as solvents, wetting agents, etc.

(Mod E Chlor-O-Mite has been developed by B-I-F Industries, Inc, Dept CP, 345 Harris Ave., Providence 1, R. I. . . . or for more information check CP 6974 on handy form which is located between pages two and three.)

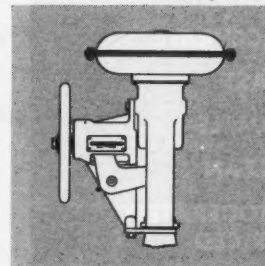
Want Side-Mounted Handwheels for Small Sizes? For Large Sizes?



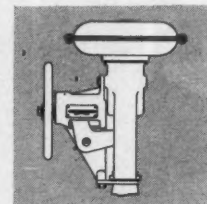
10000 Series Valve With No. 6A2 Handwheel



No. 6A3 Valve Sizes 4' to 10'



No. 6A2 Valve Sizes 3" and 4"



No. 6A1 Valve Sizes 3/4" to 2 1/2"

Get them on
MASONEILAN
Control Valves

This simple, sturdy, inexpensive type, continuously connected side-mounted handwheel provides for manual operation of all Masoneilan Control Valve sizes 3/4" to 10" inclusive. It is made in three sizes to combine adequate power with compactness in each valve size range.

OPERATIONAL ADVANTAGES

- Offers convenience and dependability for emergency operation.
- Provides an adjustable limit stop in either direction.
- Permits replacement of diaphragm without shutdown.
- Is only convenient means for manual operation of reverse-diaphragm motors.

DESIGN FEATURES

- Continuously connected — requires no clutching device.
- Bellcrank and screw construction provides ample power for operation under all conditions — even against diaphragm pressure.
- Grease-packed radial and thrust bearings and Alemite bellcrank pin bearing insure ease of operation and long service life.
- Has simple flip-over fork lock to retain wheel when not in use.
- Provides mounting pad for auxiliary devices.
- Compact — Does not increase overall height of valve — adds only from 3 1/4" to 4 3/8" to maximum overall diameter.

Ask our nearest office — or write — for details



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Sales Offices or Distributors in the Following Cities: New York • Syracuse • Chicago • St. Louis • Tulsa • Philadelphia • Houston • Pittsburgh • Atlanta • Cleveland • Cincinnati • Detroit • San Francisco • Boise • Louisville • Salt Lake City • El Paso • Albuquerque • Odessa • Charlotte • Los Angeles • Corpus Christi • Denver • Appleton • Birmingham • New Orleans • Dallas • Seattle • Mason-Neilan Regulator Co., Ltd., Montreal and Toronto

When inquiring check CP 6975 on handy form, pgs. 2-3

Match THAYER SCALES against your toughest bagging or batchweighing problems

Speed • up to 12 bags per minute!

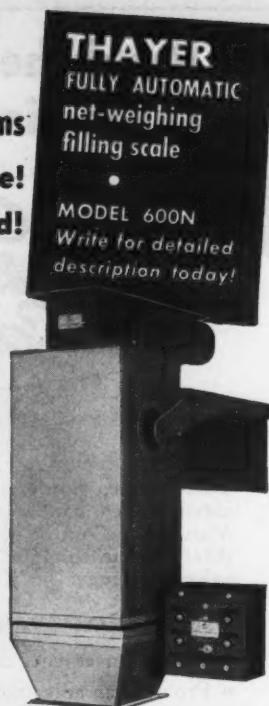
Accuracy • to within 1/10 pound!

Whether batchweighing for formulations or bagging for shipment, you can speed filling and weighing operations — and get greater accuracy too — with a Thayer Fully-Automatic Net-Weighing Scale. Dry chemicals, plastics, etc. in powder, granulated or pellet form are readily handled by a unique feeding system that closely controls amount and rate of flow. Any free-flowing or flooding material may be handled with accuracy and speed. The entire weighing and discharging operation is completely automatic.

Thayer Net-Weighing Scales handle charges from 1 to 500 pounds. Exclusive shockproof leverage system — without wear-vulnerable knife-edge pivots — guarantees continued accuracy. Hopper and feeding system are stainless steel for maximum protection against corrosion and contamination.

Thayer Gross-Weighing Scales are also available for filling directly into bags, drums and cartons.

Checkweighing Problems? . . . write for information on Thayer Checkweight Scales which automatically indicate weight of filled container and then separate off-weight units from properly filled packages! Types available for packages weighing from 1 to 200 pounds at rates up to 60 packages per minute. Latest Model 1005 automatically checkweighs bags and cartons before they are closed!



THAYER
FULLY AUTOMATIC
net-weighing
filling scale

MODEL 600N
Write for detailed
description today!



THAYER SCALE AND ENGINEERING CORPORATION

492 EAST WATER STREET, ROCKLAND, MASS.

Where weight is worth money . . . it pays to be sure!

When inquiring check CP 6976 on handy form, pgs. 2-3

Investigate
this new
combination



BLACK DIAMOND
AUTOMATIC
CONTROLLED
WEIGHT
Valve Bag Packer
AND BAG SETTLER

ACCURATE
FAST
SIMPLE
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PRICED
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GUARANTEED

BLACK PRODUCTS COMPANY

13513 S. Calumet Ave., Chicago 27, Ill., Dept. P32

MANUFACTURERS SINCE 1913

For further information, write

When inquiring check CP 6977 on handy form, pgs. 2-3

packaging



Handling and display value improved by — *package change at Wyandotte*

**More product protection, saving
in storage space also result
from use of nested cartons**

Problem: A number of difficulties were presented by the package used by Wyandotte Chemicals Corp., Wyandotte, Mich., in marketing its line of dry chemical products. These plywood drum-like containers were hard to stack and handle. The cylindrical packages were unattractive, and because of their shape and size, presented a limited area for 'selling' text and also a waste space problem to shipper and user. It was also felt that the container cost was too high in relation to value of goods — and that in many cases they were not adapted to retail and control operation use.

Solution: In seeking a package to solve these problems, Wyandotte gave consideration not only to its own difficulties, but also to those of the customer using the products involved. They specified, therefore, a package that would bar moisture even with repeated opening and closing, giving the customer a factory-fresh prod-

uct. A package easily identifiable, utilized, and handled was also thought a necessity.

Customer and producer problems were solved with the development of the 'Dual-Pak' — small cartons with a moisture-proof, easily-opened plastic liner, holding 20 or 25 lb of material. For shipment, three of these cartons are 'nested' into one larger container.

Results: 'Dual-Paks' have been found to give better product protection. They are safer to handle. When nested three at a time in a larger carton, they handle and ship with less difficulty — and give user a 'control' package, i.e., one which allows gradual utilization of material while remainder stays fresh.

This total package saves 40% in storage space as compared to the discontinued container. And, as is apparent in the photo, a high degree of display and identity value has been attained.

(Information courtesy of Wyandotte Chemicals Corp., Dept. CP, Wyandotte, Mich., manufacturers of cleaning, washing, and germicidal chemicals . . . or for more information check CP 6978 on handy form, pages 2 and 3.)

Package lining handles toxaphene, permits products to maintain over two year shelf life

Wm. Cooper & Nephews, Inc., solved problem with aid of accelerated tests and baked phenolics

Problem: Wm. Cooper & Nephews, Inc., Chicago, Ill., manufacturers of livestock and agricultural insecticides, were having difficulty in packaging their major products, which contain toxaphene. When packed in an ordinary metal container, there occurred an unusually high instance of product contamination and container leakage.

Cooper's principal products are "Livestock Cooper-Tox", "Livestock Cooper-Tox Extra", and "Agricultural Cooper-Tox". Major ingredients include toxaphene (chlorinated camphene), petroleum hydrocarbons, and either CTX-54 or ATX-60 emulsifier. Difficulty arose from the fact that toxaphene, in contact with steel container, evolves hydrogen chloride. This gas, combined with moisture present in package, formed hydrochloric acid. Acid then attacked the steel, forming a salt, thus preventing the balance of reaction, making it continuous. The result was a spoiling of emulsification properties of the product plus eventual container leakage.

Some sort of inner lining for the five-gallon steel pails seemed to be the answer. However, it was determined that tin plating was not suitable and glass was too costly and too fragile for the job.

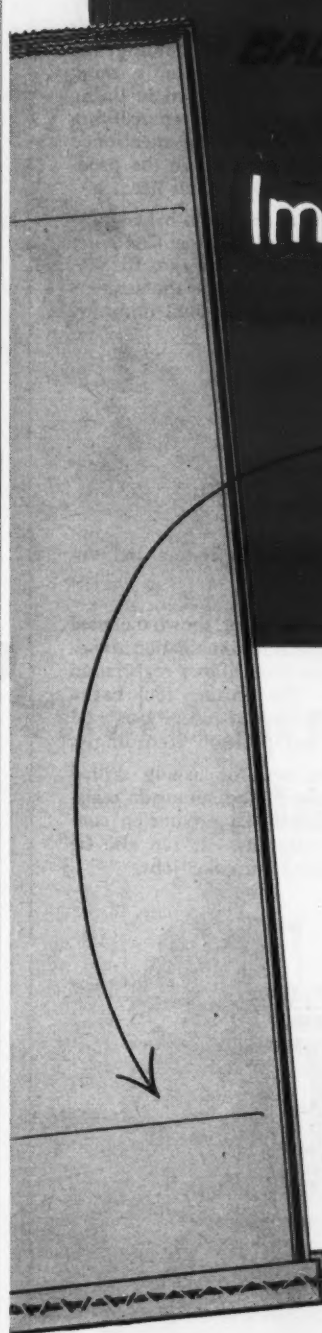
Solution: A number of test linings were obtained by Cooper from the supplier of the steel pails. These linings were subjected to six months of accelerated tests by Cooper technicians. They were able to carry on this testing program through the use of test cups in the laboratory.

A test cup is a small cylindrical steel container, open at its top. Linings to be tested were sprayed on inner surfaces of cups and then baked. Product (Cooper-Tox) was then placed in cup. Glass was placed over mouth of cup and sealed in place with wax. This "window" cup enabled Cooper technicians to test a number of linings in a small area, and to observe results without opening the cup.

Tests used included accelerated heat tests at 115°F, and cold box tests at 0°F. The product itself was tested periodically to observe emulsion. Conditions were fully controlled, since it was realized that different batches of the same product are subject to slight variations in ingredients, active or inactive. Control permitted only variable to be linings under test. For packages of less than five-gallon capacity, Cooper chose ceramic bottles to handle its products.

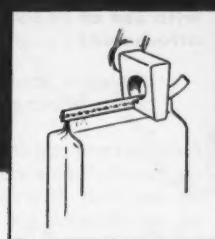

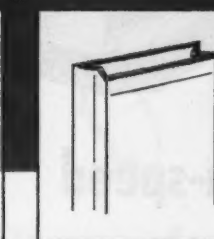
Results: The tests pointed out that high-baked phenolic linings performed better than others. Cooper eventually chose one, designated IC-25, for

(Continued on next page)



BAGPAK *PREFORM*^{*}

Improves the Open Mouth Multiwall Again!

The more easily closed **PREFORM** bagtop first introduced in this country by Bagpak—and now tremendously successful—has been further improved with the **PREFORM** feature at the bottom—at no additional cost.

This new **PREFORM** Multiwall permits filling to the very bottom—makes it easier to form the top—speeds bag closing—reduces sewing time. **PREFORM** feature at the bottom with its increased efficiency often permits the use of shorter bags.

- Makes bagtop forming easier
- Speeds bag closing
- Permits better filling
- Makes better looking package!

SEND COUPON TODAY for full information!

INTERNATIONAL PAPER COMPANY Dept. P-11
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220 East 42nd Street, New York 17, N. Y.
Gentlemen:
Please send me full information about the new Bagpak **PREFORM** Multiwall Paper Bags.

NAME _____

ADDRESS _____

*Trade Mark



International Paper COMPANY

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When inquiring check CP 6979 on handy form, pgs. 2-3



EXACT WEIGHT

High-speed Low-platform Scale

Speeds manual sacking and checkweighing operations two ways — short lever fall plus the action of an adjustable damping device bring the indicator to rest quickly; magnified indication makes possible an accurate reading at a glance. Tower is set at a 30-degree angle and revolves to any reading position. Weighing platform is only 6½ inches from floor — minimizes lifting of containers. Open construction permits easy cleaning. Weighs accurately in out-of-level position. 100-pound and 150-pound capacity.

Exact Weight Scales

Better quality control

Better cost control

THE EXACT WEIGHT SCALE COMPANY

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Send complete information on model 1120

☐ Literature only

☐ Have representative call

Name

Address

City Zone State

When inquiring check CP 6980 on handy form, pgs. 2-3

PACKAGING

(Continued from preceding page)

its advantages of economy and efficiency. This high-baked phenolic is capable of holding the toxaphene-containing product intact for a minimum of two years, with no break down in lining of five-gallon container or loss of emulsifying properties in product. It might be mentioned here that the special emulsifiers used in the products also help promote this long shelf-life.

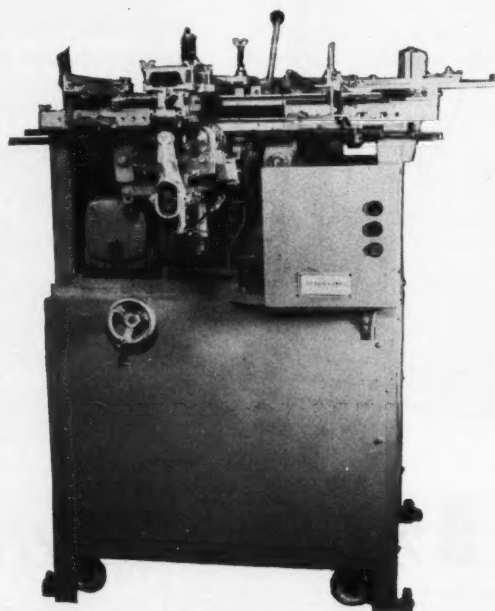
(Five-gallon steel containers and high-baked phenolic linings are products of Inland Steel Container Co., Dept. CP, 6532 S. Menard, Chicago, Ill. . . . or for more information concerning manufacturer's product, reader may simply check CP 6981 on handy form, pages 2 and 3.)

Out-of-round bottles labeled with use of registration attachment . . .

eliminates need for skilled operators and improves printing

Cam operated registration attachment, shown mounted on manufacturer's semi-automatic combination shoulder and body decorating machine, allows registration of out-of-round bottles. The floating tool has a guide to compensate for the out-of-round ware and brings the tool into proper position accordingly.

Attachment eliminates the need of having skilled operators for eye registration. The automatic registration is also said to increase the production considerably by eliminating misprints. It can also be used to advantage in seaming one-color jobs.



Registration attachment is shown mounted on machine above and slightly to the right of handwheel



- A truly portable bag closer . . . weighs only 10½ pounds.
- Lowest priced bag closer on the market.
- Requires no installation . . . plug into any outlet.
- Handles textile and paper bags.

Thoroughly-proved by thousands of users all over the world to be practical and efficient under varying conditions for constant or occasional use in large or small plants.

Address inquiries to:

DAVE FISCHBEIN COMPANY, Industrial Sewing Machinery

Dept. 9B, 38 Glenwood Avenue, Minneapolis 3, Minnesota
When inquiring check CP 6982 on handy form, pgs. 2-3



With HYDRO-SHEAVE® Fluid Drive
Electric motors perk up, drive gears and driven equipment settle down to smooth performance — when Twin Disc's famous HYDRO-SHEAVE Drive soaks up shock loads . . . allows motors to come up to effective speeds to start heavy loads . . . levels current surges. Ask your local Authorized Twin Disc Hydraulic Dealer to help eliminate your "shudders and shakes."

Sizes for motors and engines from ¼ to 50 hp.

TWIN DISC
CLUTCHES AND HYDRAULIC DRIVES

When inquiring check CP 6983 on handy form, pgs. 2-3

CHEMICAL PROCESSING

PACKAGING

Attachment registers through use of an embossed lug, depressed slot, or depressed dimple. It is fully cam operated and coordinated with the complete operation of the machine. Principle involved is mechanically correct in that when the bottle is placed in the machine, it is automatically rotated to a registering position. Clutch is thrown automatically and places the bottle in the registering position in a positive drive contact for printing.

(Product of Solar Engineering & Equipment Co., Dept. CP, Beaver, Pa. . . . or for more information check CP 6984 on handy form, pages 2 and 3.)

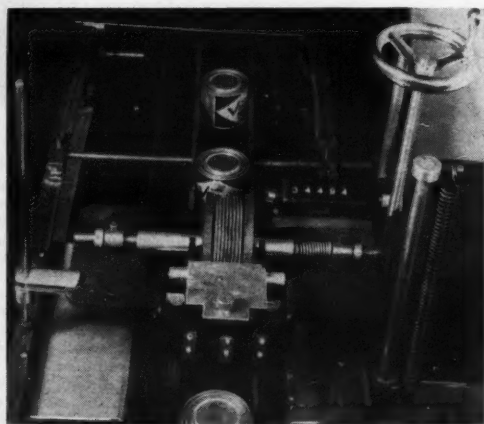
Automatic coding or marking of can tops, boxes possible with printing machine . . .

unit, which may be installed on any conveyor, marks objects at rates to 90 per minute

Uses: For coding or marking tops of cans, boxes, or similar objects.

Features: Machine can be installed on any conveyor. It will mark at rate of one to ninety objects per minute.

Description: Heights or spots to be marked may be adjusted quickly without changing wheels or other mechanical parts. Registration is accomplished by adjusting type on printing wheel.



Speed of conveyor dictates speed of printing

A fractional hp motor brings printing wheel to starting position after each impression. Motor disengages while object is being marked, allowing speed of conveyor to dictate speed of printing. Ink fountain and distributing roller are supplied to give continuous operation. Machine is reported to be highly adjustable, requiring minimum maintenance and setup.

(Marking machine is a product of Algene Marking Equipment Co., Dept. CP, 232 Palisade Ave., Garfield, N.J. . . . or for more information check CP 6985 on convenient Reader Service slip located between pages 2 and 3.)

Can you name these states?



There are Continental fibre drum plants in all of them

ANSWERS: 1. New York 2. Pennsylvania 3. Ohio 4. Missouri 5. California

No other company offers you the cross-continent, on-the-spot fibre drum service of Continental. With the opening of our giant new plant in Pittsburg, California, there are Continental manufacturing facilities within easy shipping distance, wherever you do business in the United States.

This easy availability is only part of the Continental service story. When you choose tough, lightweight Leverpak, Stapak, or Fiberpak drums, you have your choice of many sizes, 17 colors, any of 14 inks. Made-to-order linings are available to give your product extra protection. Continental's packaging engineers and research teams stand ready to help you test your shipping methods and to help solve your packaging problems.

For safe shipment of your bulk products, you can't beat Continental fibre drums. For packaging advice, you can't beat Continental service. Why not call on us soon?



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When inquiring check CP 6986 on handy form, pgs. 2-3

Bemis B-FLEX

A Better Multiwall Valve Bag FOR LESS!

Look at these B-FLEX benefits:

LOWER BAG COSTS... Save up to \$2.50 per thousand.

FASTER PACKING...LOWER PRODUCTION COSTS.

UNIFORM WEIGHTS... stop over-packing.

MINIMUM SIFTING.

Ask your Bemis Man for the complete B-FLEX story.

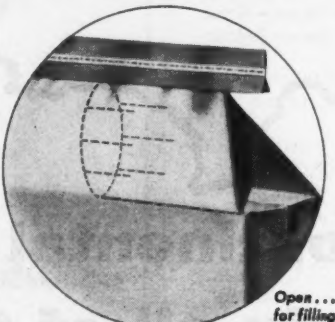
With Bemis B-FLEX Bags, you also get the same bonus you get with all Bemis Multiwalls—**BEMIS MULTI-COLOR PRINTING**... your brand at its finest on multiwall bags.

Bemis

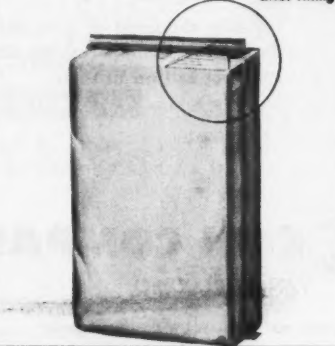
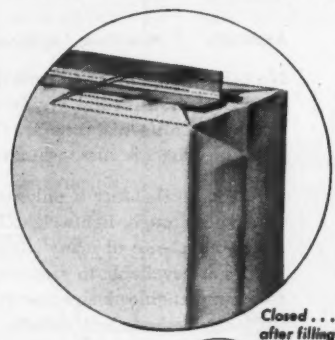


General Offices—St. Louis 2, Mo.
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Here's Why It's Better...



The FLEX Does the Trick...



PACKAGING

Maximum reading thermometer in package withstands shipping jolts

easily made in lab by sealing chemicals of different melting points in glass tubes

Problem: While investigating methods of safe transportation of heat-sensitive products, physicists of General Mills Inc., came up against the matter of "How to check the temperature inside the package during shipment?" Simplicity was desired, and use of recording instruments would involve considerable elaborate equipment.

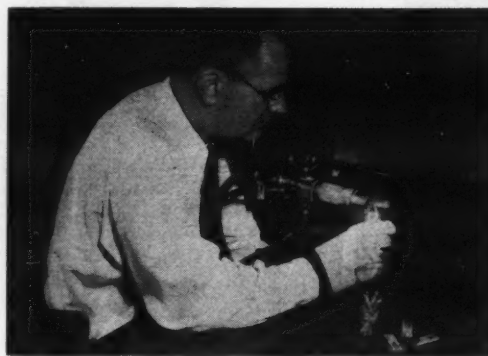
Furthermore, anyone who has used maximum indicating thermometers know how tricky and uncertain that method can be, with thermometers frequently breaking when the package receives a handling shock. If they don't break, the shock is liable to jolt the mercury to a new and unreliable reading.

During one of the first shipping tests, three of these instruments were used. Of the three, one had reset itself in such a manner, due to a jolt.

Solution: Clarence Felt, of the General Mills Research Laboratories, Minneapolis, worked out a set of lab-made "chemical" thermometers. In a small glass tube was sealed a pure organic chemical having a sharp melting point in the range needed for the packaging tests.

A bundle of six tubes was small enough to be placed on the inside of the packages. These packages were then placed in various locations inside the boxcars, and removed at the end of the shipping run. When each package was opened, examination of the tubes disclosed the maximum temperature reached by the package contents during shipping.

This maximum temperature was readily apparent, since the crystalline chemicals fused whenever temperature reached their melting points, and did not return to their original macrocrystalline shape.



How to make "chemical" thermometers: Using 3/16" ID tubing, cut sections approximately 2" long. Heat seal one end, and allow to cool. Tap small amount of crystalline chemical through opening at other end. About 1/2 gm or less is sufficient. Use chemicals with melting points which range through the temperatures you expect to encounter, and a different chemical for each tube.

Insert tube in dry ice when heat-sealing the opening, to prevent crystals within tube from melting as Clarence Felt demonstrates in above photo.



VACUFLOW

POWDER FILLERS

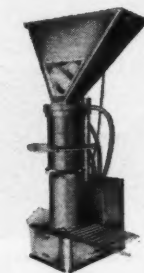
Cut Product Wastage. Vacuflow powder filling equipment operates on a principle of vacuum feeding, instead of pressure, to pack powder into a container.

Air is removed from the container to create a vacuum which draws a measured quantity of powder from the hopper. There is no problem with dust control, since the unique Vacuflow method simply does not involve air currents that cause dust.



Rotary Model

Semi-automatic models are available for filling containers ranging from the tiny talcum box up to and including 100 lb. paper bags and 200 lb. drums. Rotary models are available for automatic production of 5 lb. sizes or less at speed of 45 to 300 per minute.



Model E

Pneumatic is the one manufacturer in a position to furnish machines for making up complete production lines. Units are available for air cleaning, powder and liquid filling, capping and labeling a wide range of bottles, cans or jars.

PNEUMATIC SCALE CORP., LTD.
67 Newport Ave., Quincy 71, Mass.
Also: New York; Chicago; San Francisco;
Los Angeles; Seattle; Leeds, England



When inquiring check CP 6988 on handy form, pgs. 2-3

CHEMICAL PROCESSING



Bundle of tubes is placed in package, which can be placed in container and shipped by truck or rail without difficulties inherent in other methods

If appearance of the various chemicals is not substantially different, you may want to identify them. A method used at General Mills by Clarence Felt was to code each tube by etching with a diamond stylus. The tubes were laid on a piece of cellulose tape. Final step was to roll up the tape and tubes into a compact cluster, which was inserted in the package as shown in photo.

Results: During the tests, cross-checks with the "chemical" thermometers against both the recording and maximum indicating types showed that bundle of sealed chemicals gave comparable and dependable results for the project (see table). By carefully spotting cartons containing the in-package thermometers, the temperature pattern at specific spots was obtained.

By selection of suitable chemicals having other melting points, these simple constructed instruments have a wide variety of application for indicating maximum temperatures, where a small, rugged instrument is needed. For more information on selection of chemicals with proper melting points, consult your local chemical supplier.

Handy booklet gives indexed info on consulting services

Informative bulletin gives data on applied research, development, and testing activities of technical research organization. Spiral-bound booklet, which is divided into sections corresponding to the various floors of the organization's home office, is illustrated with photographs of work in progress.

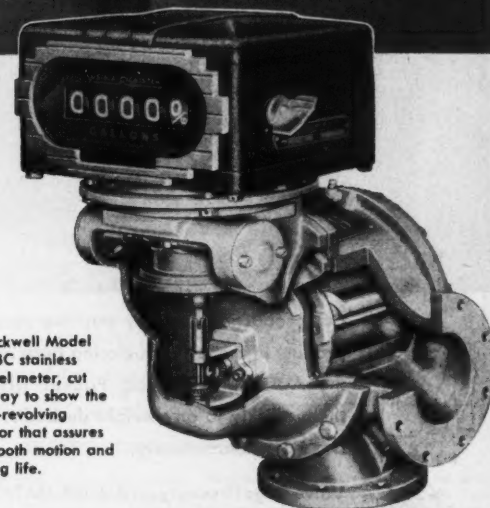
"Services" is issued by Foster D. Snell, Inc., Dept. CP, 29 W. 15th St., New York 11, N. Y. When inquiring specify CP 6989, pgs. 2 & 3.

GET POSITIVE CONTROL OVER FORMULAS, COSTS, INVENTORIES... ROCKWELL *Stainless Steel* METERS

MEASURE CORROSIVE LIQUIDS! Including Foods, Pharmaceuticals, Chemicals and Liquors

Here's a meter especially designed for accuracy and long life when measuring corrosive liquids. It is constructed *inside and out* of stainless steel.

With it you can get positive metered accounting for a multitude of liquids that cannot be handled by ordinary meters. Now you can guard the quality of your formulations; keep tab on liquid inventories; have accurate records for cost control and tax analysis purposes. Use the handy coupon for full details.



Rockwell Model 2-BC stainless steel meter, cut away to show the all-revolving rotor that assures smooth motion and long life.

CLIP COUPON—MAIL TODAY

ROCKWELL MANUFACTURING COMPANY		A 5406
PITTSBURGH 8, PENNSYLVANIA		
Gentlemen:		
I am interested in measuring _____ (Name of Liquid)		
Pipe Size _____	"	
Working Pressure _____ psi.	Temperature _____ °F	Max.
Max. Flow Rate _____ gpm.	Min. Flow Rate _____ gpm.	
YOUR NAME _____		
COMPANY _____		
STREET _____		
CITY _____	ZONE _____	STATE _____

Use for all these purposes

- LIQUID DELIVERY CONTROL
- COST CONTROL—DEPARTMENT CONTROL
- FORMULA CONTROL—INVENTORY CONTROL
- PRODUCT QUALITY CONTROL

YOU CAN RELY



ON ROCKWELL

When inquiring check CP 6990 on handy form, pgs. 2-3

CUT COSTS

Pack Chemicals
in VALVE BAGS
with

AUGER-MATIC

Fills and Weighs... All in One Operation



NO DUST

Cut production costs by packing your product in modern self-closing bags... the AUGER-MATIC Bag Packer fills them quickly to any weight desired... shuts off automatically.



NO WEIGHING

Valve Bags fit snugly on AUGER-MATIC spout so no dust escapes... keeps bags clean... eliminates costly tying or bag closing equipment.



NO SEWING...
NO TIEING

AUGER-MATIC Bag Packer is equipped with multi-twist auger... packs any materials from powder to pellets. Easily moved from one filling point to another.

Send for descriptive literature

E. D. CODDINGTON MFG. CO.

5036 North 37th Street • Milwaukee 9, Wisconsin

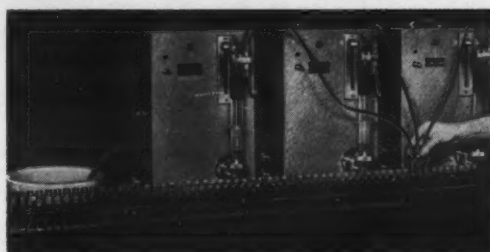
When inquiring check CP 6991 on handy form, pgs. 2-3

PACKAGING

Multiple filling of small containers accomplished by electronic unit

Uses: For high-speed filling of vials and small containers up to 4 1/2 oz in size.

Features: Any number of units may be operated in tandem. All units operate in perfect synchronization, and removal of any unit for servicing does not affect operation of others. Any desired production rate can be achieved by simply adding



Only one operator needed regardless of number of units in use

more units as required. For example, three-unit set-up shown in accompanying photo fills 50,000 one-oz vials per 8 hr day. Only one operator is required regardless of number of units in use.

Description: Machines are said to handle oils, suspensions, concentrated solutions, and aqueous solutions with equal facility. Volume delivered by each unit can be adjusted with micrometer accuracy independent of other units. Entire filling mechanism of each unit can be removed for steam sterilizing. Pistons can be furnished in stainless steel or glass as desired.

Machine is a positive displacement type filler; therefore, variations in bottle size cannot affect accuracy of fill. Synchronization mechanism and motor control are electronic. Filamatic Add-A-Unit takes only a short time to set up and is equally suited for long or short production runs. Unit is also applicable for metering operations where varying quantities of liquid must be dispensed in batch or continuous processes. Ratios as high as 2000:1 are attainable.

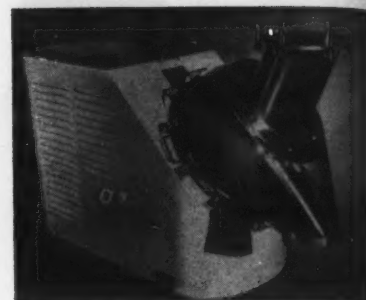
(Filling machines are a product of National Instrument Co., Dept. CP, 5005 Queensbury Ave., Baltimore 15, Md. . . or for more information check CP 6992 on handy form, pages 2 and 3.)

Versatile marking machine series handles cylindrical, rectangular containers, products, or parts

Uses: For marking contents and parts numbers or otherwise identifying products or containers of fiber, metal, plastic, ceramic, paperboard, or corrugated construction. This includes marking on the end, side, or top of boxes and cartons, on lids of cans, and around periphery of containers, as well as marking products prior to packaging.

Rietz disintegrators

for
fine
grinding



Rietz Angle Disintegrator

... on dry materials, wet grinding, mixing and dispersion of powders, solids and liquids, pastes. Patented Differential Discharge eliminates unwanted materials.

Write for Bulletin No. 501

FREE
Laboratory tests
of your
products

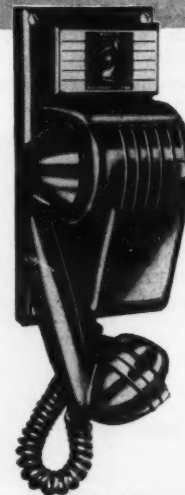
Pilot plant
equipment
for use
in your plant

Small
rental units

Rietz MANUFACTURING CO.
126 Todd Road, Santa Rosa, Calif.

When inquiring check CP 6993 on handy form, pgs. 2-3

**OUTLYING
PLANT LOCATIONS INSTANTLY
ACCESSIBLE**



Quickly...
Easily...
Install

WHEELER
SOUND POWERED
Electric
TELEPHONES

Write for information on this thoroughly tested and proved intercom equipment that operates WITHOUT BATTERIES or outside power source... requires no maintenance... is always dependable

IN EMERGENCY. LOW first-and-last cost. No electrical hazards. Handsets, Pair Phones, or complete intercom.

WHEELER
DIVISION OF THE SPERRY CORP.
1112 EAST AURORA STREET
CHICAGO, ILL.

28WH52A

When inquiring check CP 6994 on handy form, pgs. 2-3

CHEMICAL PROCESSING

Feature:
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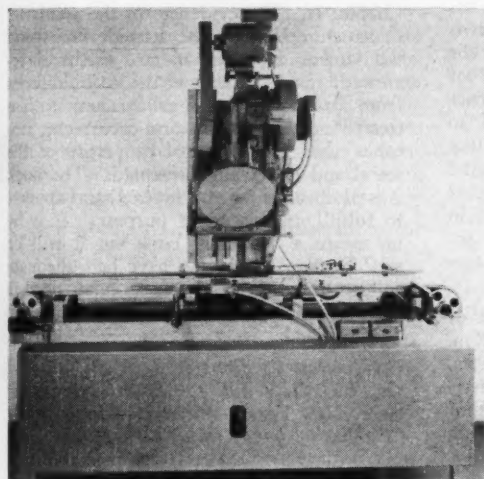
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MARCH

Features: Versatile machines may be used as separate marking units, giving semi-automatic operation; or may be included in a through-flow production or packaging line as an automatic unit. An integral conveyor, extending on either side of marking unit, will receive containers fed manually or from a processing conveyor, carry them through marking cycle, automatically position them if necessary, and discharge marked unit to a take-away conveyor or packaging table.

Description: Machine series includes three models: Model 49A marks on flat surfaces of rectangular or square objects only; Model 49AB marks on periphery of cylindrical objects and on rectangular and square objects; and Model 49AC marks on periphery of cylindrical objects only.

Units are designed so that change-over from handling one size of container to another or from printing a flat surface to a cylindrical surface (in the case of 49AB) is accomplished by a few simple



May be included in a through-flow production or packaging line as an automatic unit

adjustments. Machines are said to require services of operator only to add ink, change type, or adjust from one container to another.

Maximum sizes of objects series will accommodate are: cylindrical objects, 10" max diam, 12" max length; flat surfaces of rectangular or square objects, 10" max height, 18-22" max length, 12" max width. Production based on these specifications is approximately 20-30 per min. Actual production rate is dependent on size, shape, and weight of object to be handled. Maximum imprint area on all three models is 5" front to back, 11" left to right. Machine dimensions are 71 x 37", height 83". All three models can be furnished with explosion-proof electrical equipment where required for, ordnance use.

(Marking machines are a product of Markem Machine Co., Dept. CP, Keene, N. H. . . . or for more information concerning manufacturer's product, reader may simply check CP 6995 on handy form located between pages two and three.)

The Dramatic Answer for Top Efficiency in Guarding Against Tramp Iron Danger

it's the new

YOU'LL be delighted with this great new "Magnalarm" line. Here's why:

The new "Magnalarm" line . . . complete in 3 magnetic strengths and 35 standard sizes from 4" to 72" . . . combines a revolutionary automatic alarm system with Eriez permanent magnetic separators . . . developed to tell you *automatically* when separators have accumulated so much tramp iron that their efficiency is lowered below minimum requirements!

How would *you* want to be signaled? By a light on the machine or in a far-off office? By a bell or a buzzer sounding? Or, for ultimate safety, by your machinery shutting off? You can be signaled by any of these optional systems. And, just to make positive the tramp iron *is* removed, the light stays on or the bell keeps sounding or the machinery stays shut off until the magnet face is cleaned!

Magnalarm

— a magnetic separator with a brain



PAT. PENDING

WHAT BENEFITS "MAGNALARM" BRINGS TO YOU:

1. Assures the greatest possible magnetic efficiency!
2. Affords maximum protection against fires, machinery damage and product contamination caused by tramp iron!
3. Saves time . . . unnecessary shut downs for inspections are discontinued!
4. Gives you quality control on the tramp iron to be found in various runs of materials!
5. Plus all the other advantages of Permanent Magnets!

HOW "MAGNALARM" WORKS:

The heart of the "Magnalarm" is the ferrometer . . . a device which measures the accumulation of tramp iron on a magnet. "Magnalarm" opens and closes a circuit to which your special alarm is attached when a pre-set amount of tramp iron is caught. This degree is pre-set at the Eriez factory to meet the normal requirements . . . but it may easily be changed by you at your location if a change is desired.

The only electricity used is that which sets off the electrical device connected with the "Magnalarm". No other electricity is used because the Eriez separator is still a self-contained, non-electric unit which holds its magnetic power indefinitely. The electricity used in the alarm in no way affects the strength and magnetic field of the powerful magnetic material, ALNICO V.

COST AND INSTALLATION

"Magnalarms" are easy to install (simple installation instructions come with each unit) and do not require any maintenance until the signal is given for cleaning. The cost of the "Magnalarm", fully guaranteed by Eriez, is but a fraction more than that of an ordinary old-type magnetic separator!

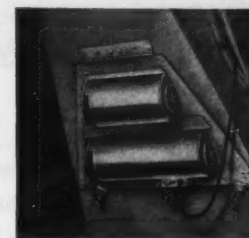
No one else has "Magnalarm" or anything like it! Count on Eriez to stay in front! Count on Eriez to give you the latest in magnetic equipment.

TYPICAL "MAGNALARM" SITUATIONS:

1. A maintenance man who is in charge of cleaning the magnets overlooks a magnetic separator . . . but he is quickly reminded by the "Magnalarm" before it is too late!
2. A magnetic separator in a difficult position or in a remote spot misses inspection and cleaning . . . but with the "Magnalarm" acting as an automatic "baby sitter", no one has to waste time or effort "inspecting" . . . the "Magnalarm" notifies those concerned that cleaning time has come.
3. A batch of raw material, for example, might contain an unusual amount of tramp iron which the Eriez magnetic separator catches . . . but is "off-guard" until the magnet is cleaned. "Magnalarm" tells you when this happens.



An Eriez "Magnalarm" installed on a Gravity Flow Hump signals the presence of tramp iron in this hard-to-get-to, enclosed, food processing line.



Eriez Double Row "Magnalarm" installation assures top efficiency in keeping tramp iron out of this rubber reclaiming line, protecting the sizing screens ahead.

MAGNETIC EFFICIENCY AS GOVERNED BY TRAMP IRON ACCUMULATION



"Magnalarm's" signaling action makes sure you operate only in the strong, safe range marked "A". An ordinary plate magnet's strength will be lowered by tramp iron accumulation to the inefficient operating danger area marked "B" unless plates are checked and cleaned frequently.

WRITE FOR EXCITING, FULL DETAILS

Even though we have developed "Magnalarm" and are naturally in love with it, we think you'll get a thrill too, when reading about the full story of "Magnalarm" in a free brochure which is yours for the asking. Sizes. Magnetic strengths. Types of installation. Construction. Electrical circuits. Type of ferrometer element. Special features. Even how to order. It's all there.

Fill out the easy coupon below. Do it yourself . . . or do it for someone within your organization who will be grateful for the information.

ERIEZ

Eriez Manufacturing Company
73C Magnet Drive, Erie, Pa.



Send me the "MAGNALARM" literature

Name _____
Address _____
City _____ State _____
Company _____ Title _____

When inquiring check CP 6996 on handy form, pgs. 2-3

The OLIVITE Acid-Handling Pump
is really 2 pumps in one!



Yes, many chemical plant operators have come to regard the Olivite Pump as two pumps in one... one, an efficient centrifugal pump for handling liquids; the other, a durable pump with high resistance to corroding solutions.

In one large chemical plant with extensive acid-pumping operations, more than 100 Olivite Acid-Handling Pumps are now in service. They are handling several different solutions, both hot and cold, with widely varying pH values.

Thousands of these corrosion resistant and leak-resistant pumps have been supplied to industry through the years. Chances are the Olivite could fit very nicely into your pumping operations. Write for our Bulletin 308-R, which gives complete information. When you do, please give full details of your pumping problems.

It is possible you may also be interested in the ODS Diaphragm Type Pump which gives excellent results in pumping solutions as well as slurries. Bulletin 309-R gives full details.

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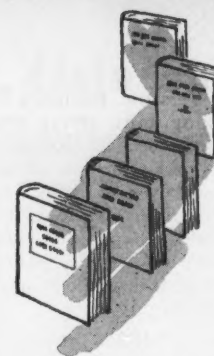
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When inquiring check CP 6997 on handy form, pgs. 2-3

Recent Books



COMPREHENSIVE INORGANIC CHEMISTRY

Reviewed by JOHN W. MURRA
Professor of Chemistry
Virginia Polytechnic Institute

"Comprehensive Inorganic Chemistry" has been edited by M. Cannon Sneed, J. Lewis Maynard and Robert C. Brasted, all of the University of Minnesota. This series of eleven volumes is intended to be a reference work on inorganic chemistry directed to "those engaged in chemical manufacture and development and to those in advanced studies in chemistry in institutions of higher learning". It is intended to be broad in scope, but not encyclopedic, and thus includes chapters on related aspects of theoretical chemistry.

Volume I contains chapters on Principles of Atomic and Molecular Structure by Wm. N. Lipscomb of the University of Minnesota, Theoretical and Applied Nuclear Chemistry by Paul R. O'Connor of the University of Minnesota and The Actinide Series by Glenn T. Seaborg of the University of California.

Chapter I presents a concise description of quantum mechanics and its application to atomic structure and chemical binding. The various types of bonds and attractive forces involved in molecules, crystals, liquids, and gases are discussed and illustrated with appropriate examples. Several pages are devoted to the structural chemistry of crystals. This chapter should serve as a valuable link between the college text and the more rigorous and complete advanced works. The emphasis is on the physical relationships rather than on the mathematical formulation, through the latter is not ignored.

Chapter II on nuclear chemistry presents a description of the properties of the nucleus and the particles involved in its structure and transformations. The various types of nuclear transformations and the factors governing the stability of the nucleus are discussed. The kinetics of radioactive decay and the course of the four principal decay series are presented in some detail. The application of stable and radioactive nuclides to chemical kinetics and other chemical problems and to analytical chemistry is

considered. The author prefers the word "nuclide" for a single nuclear species and reserves the word "isotopes" for different nuclides of the same element.

The third chapter on The Actinide Series is put in Volume I since it follows naturally after the theoretical material presented in Chapter II. The evidence for the similarity in structure between the actinide series and the lanthanide series of rare earths is reviewed. Each member of the actinide series from actinium through californium is then treated in turn, the history, occurrence, isotopes, uses, and chemical properties of the metal and ions being presented. The book is well documented and indexed and appears to fulfill its announced purpose. It is by no means a "popular" book but it will be welcomed by those who have had adequate college training in chemistry and need a bridge to some of the newer developments.

To obtain "Comprehensive Inorganic Chemistry" remit \$5 direct to D. Van Nostrand Co., Inc., Dept. CP, 250 Fourth Ave., New York, New York. When inquiring specify CP 6998 on handy form, pages 2 and 3.

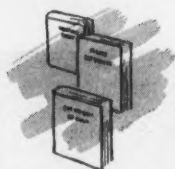
ENCYCLOPEDIA of CHEMICAL TECHNOLOGY, VOL II

Reviewed by T. F. MEINHOLD

Composed of 950 pages, Volume 11 of the "Encyclopedia of Chemical Technology" has been published. The entire series is edited by Raymond E. Kirk, Head, Department of Chemistry, and Donald F. Othmer, Head, Department of Chemical Engineering, both of Polytechnic Institute of Brooklyn. Latest addition to the series begins with "Polyols" and ends with "Rutin".

Eighty experts from the chemical industry and research institutions have contributed to this volume. Presented in alphabetical arrangement, subjects are clear-cut and easy to read. Work consists of comprehensive summaries on materials, methods, processes, and equipment used in the chemical and chemical engineering fields.

Potassium compounds are described in ap-



Recent Books

proximately 17 pages. The article deals primarily with the inorganic compounds of potassium. Such compounds as potassium citrate and potassium oxalate are discussed under the specific organic acid, as citric acid and oxalic acid, in other volumes. Included in the article are brief summaries on general chemistry, analytical methods, occurrence and production, mining and refining, economic aspects, and uses.

Power generation is covered in 22 pages. Included are internal combustion engines, gas turbines, steam engines, steam power plants, and hydroelectric power generation.

Largest section in this volume is devoted to rubber. It includes natural and synthetic rubber, rubber chemicals, and rubber compounding. A small volume in itself, subject is presented in approximately 135 pages. Interesting table gives listings of synthetic rubber plants in US, and shows maximum annual production capacity of each plant.

Some of the other subjects covered in the volume include printing ink, pressure techniques, quality control, quaternary ammonium compounds, proteins, pulp, radiochemistry, rayon, reaction kinetics, refractories, refrigeration, resins, and rocket propellants.

The entire series is a valuable addition to any technical library and is highly recommended.

To obtain "Encyclopedia of Chemical Technology, Volume 11" remit \$30 (\$25 to holders of subscription) direct to Interscience Publishers, Inc., Dept. CP, 250 Fifth Avenue, New York 1, N. Y. When inquiring specify CP 6999, pages 2 and 3.

FIBRES FROM SYNTHETIC POLYMERS

Reviewed by PAUL W. MORGAN
Research Associate

E. I. du Pont de Nemours and Company

This book by Rowland Hill is much more than the title implies; that is, it is not wholly or even primarily concerned with the preparation and properties of fibers. Dr. Hill, as editor with eighteen co-authors, has covered the preparation and characteristics of the completely synthetic high polymers from which fibers can be made and has then described the methods of forming fibers and some of the fiber properties and

applications. This is a large area to be spanned by one book, and yet it has been well done.

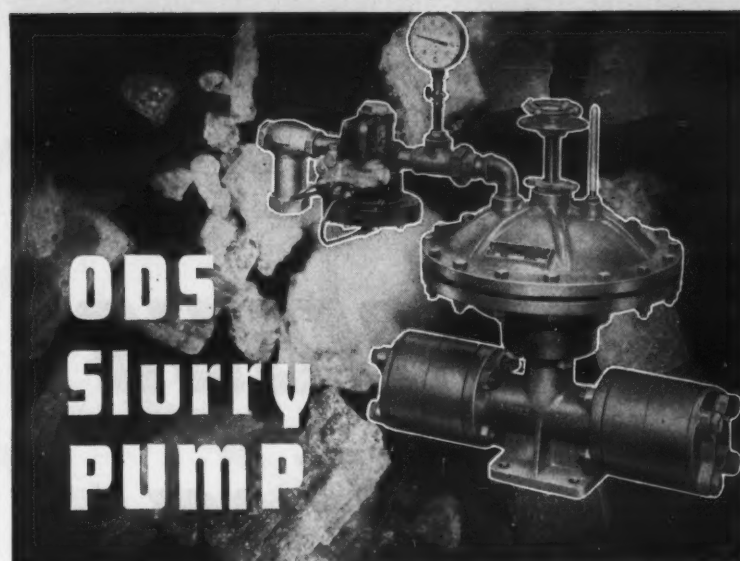
Chapters 2 to 4 describe addition polymerization, which includes the vinyl and acrylic polymers; 5 to 7 discuss condensation polymers, such as polyamides and polyesters; 8 to 12 deal with the structure and physical properties of polymers, as well as the techniques for determining these features; 13 to 16 are on the preparation of fibers; and 17 to 20 are concerned with the properties and applications of fibers. Each author is well qualified by experience to write about his aspect of the subject and some are internationally recognized authorities. C. W. Bunn and R. J. W. Reynolds, who are major contributors to the book, wrote sections on polymer structure and condensation polymers, respectively.

The material is presented in an orderly and readable style of surprising uniformity in view of the number of authors. The degree of detail differs — some chapters are too brief and general, but each can be read independently of the others. The reader of the sections on polymer preparation and properties should have a fair understanding of the principles of organic and physical chemistry. Those who are experts in specific fields will probably find in the discussions of their specialties little that is unfamiliar. However, they will find other chapters to be illuminating and helpful.

Each chapter is followed by a good bibliography, though to the American reader the use of more US equivalents to the many British patents would be helpful. The statement at the bottom of each page of the location of references is a novel convenience. Adequate indices and outlines are provided.

This book is excellent reading for all engaged in any phase of polymer chemistry, or in the technical aspects of the manufacture of textile fibers and for technically trained management personnel who wish to broaden their understanding in this field. It should prove to be a practicable text in college courses on polymer chemistry and should be useful in industrial training of new research people in polymer chemistry and synthetic textiles.

To obtain "Fibres from Synthetic Polymers" remit \$12.50 direct to the Elsevier Press, Inc., Dept. CP, 402 Lovett Blvd., Houston, Texas. When inquiring specify CP 7000 on handy form, pages 2 and 3.



... protects friable crystals against degradation

AND here's some proof that the ODS does protect against crystal spoilage... proof of the relatively gentle handling of crystalline products by the ODS Diaphragm Slurry Pump which in this case is grainer salt.

Screen Mesh	Salt at Grainer Discharge	Salt After ODS Pump*	Salt After Centrifugal Pump*
10	10.2%	11.4%	1.6%
14	17.8%	18.3%	7.3%
20	15.6%	17.7%	9.8%
28	22.0%	24.6%	11.5%
35	14.9%	14.6%	20.6%
48	10.0%	7.6%	18.6%
65	5.4%	3.1%	11.2%
100	2.2%	1.0%	6.0%
-100	1.9%	1.7%	3.4%

*Note that both pumps had a 160 foot carry and a 45 foot lift. Note also, that in certain sizes, there was actually a measurable increase in crystal size resulting from the ODS brine cooling effect.

If degradation of crystalline size and structure is important when the slurry in your process is handled, you certainly should check on the merits of the ODS Pump. Even if crystal degradation is not an important factor, other advantages will appeal to you... advantages such as low maintenance, no mechanical linkage to the diaphragm, no weakening holes in the diaphragm, no clogging of the valves. Write or call our nearest sales office.



308-R & 309-R

Bulletin 309-R gives full details of the ODS Pump. Shall we send you a copy?

If you are handling clear chemical solutions of any type, hot or cold, our Olivite Acid Handling Pump will probably serve you best. Shall we send you a copy of Bulletin 308-R?

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Hazleton, Pa.
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When inquiring check CP 7001 on handy form, pgs. 2-3

Stop dangerous handling of INDUSTRIAL LIQUIDS



You can stop dangerous handling of liquids and frequently reduce insurance costs in the process, by using Tokheim Transfer Pumps. Spilling, slopping, over-filling and dripping—constant enemies of safety—are easily prevented. Your plant can be kept cleaner. Work is speeded. Waste is halted. Accidents are prevented.

Business and industry are daily finding more uses for these rugged little Tokheim pumps. They are available with hose or spout outlets and other optional attachments. Pump operates on both forward and back strokes and is capable of delivering 20 gallons a minute. Will pump 'most anything that pours. Offered with alternate parts to handle special liquids. No plant should be without a battery of Tokheims.

Call your dealer, your Tokheim representative, or write factory for literature.

TOKHEIM
DOUBLE-ACTION
HAND PUMPS

General Products Division
TOKHEIM CORPORATION
Designers and Builders of Superior Equipment
1960 Wabash Ave. Since 1901 Fort Wayne 1, Ind.
Factory Branch: 1309 Howard Street, San Francisco 3, California
Canadian Distributor: H. Reeder, 205 Yonge Street, Toronto, Ont.

Gasoline Pumps and Accessories • Air and Liquid Dispensers • Specially Engineered Products

When inquiring check CP 7002 on handy form, pgs. 2-3

material handling

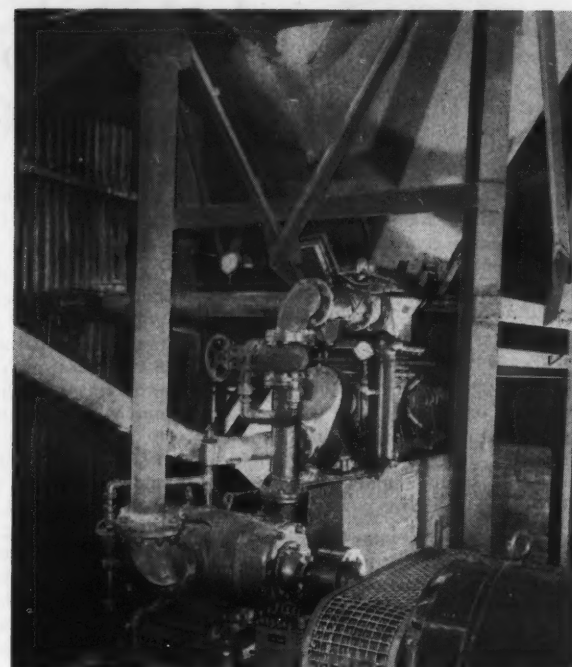


Fig 1 Dust feeds from hopper into Fuller-Kinyon pump. Screw conveyor element of pump feeds dust into air-mixing chamber. Air conveys dust into supply bin above roasters. Compressor is shown at right

Metal sulfide dust returned to roasting furnace before it cools

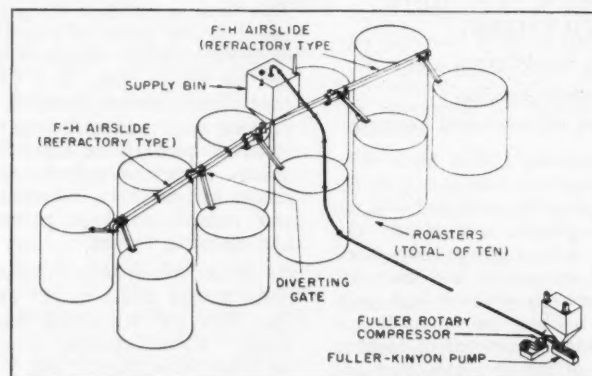
Pneumatic system recovers dust and returns it to roasting operation at original temperature of 800°F

Problem: During the roasting of metallic sulfides at the Noranda Smelter, Noranda, Quebec, considerable dust is formed. A satisfactory method of returning the hot dust (500 to 800°F) to roasting

furnaces was desired.

Solution: A special pneumatic conveying system was installed to return the hot dust to furnaces for reprocessing.

In the setup, dust is gravity-fed from Cottrell precipitator hopper into a Fuller-Kinyon pump containing a screw element for sending dust into an air-mixing chamber where it is made fluent by compressed air (Fig 1). From the mixing chamber,



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MARCH

compressed air at 15 psi delivers the dust through a conveying line to a supply bin located above the roasters.

Dust is then fed uniformly from supply bin to ten roasters by means of an Airslide (Fig 2) which supports the stream of dust by means of an enclosed, inclined porous medium (in this case, refractory aluminum oxide).

Special feature of the installation is use of a refractory as a porous medium to accommodate hot dust. For most applications at normal temperatures, such as conveying cement, gypsum, soda ash, iron ore and lime, a fabric is used.

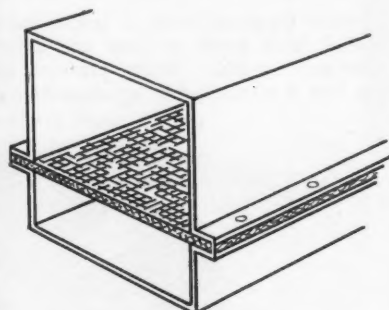


Fig 2 Drawing shows enclosed Airslide which uniformly delivers hot dust (500 to 800°F) to roasters

(Pneumatic conveyor system for handling metallic sulfide dust at Noranda was furnished by the Fuller Company, Dept. CP, Catasauqua, Pa. . . or for more information check CP 7003 on handy form, pages 2 and 3.)

Where doors must be opened often and are subject to hard knocks, rubber stands the gaff

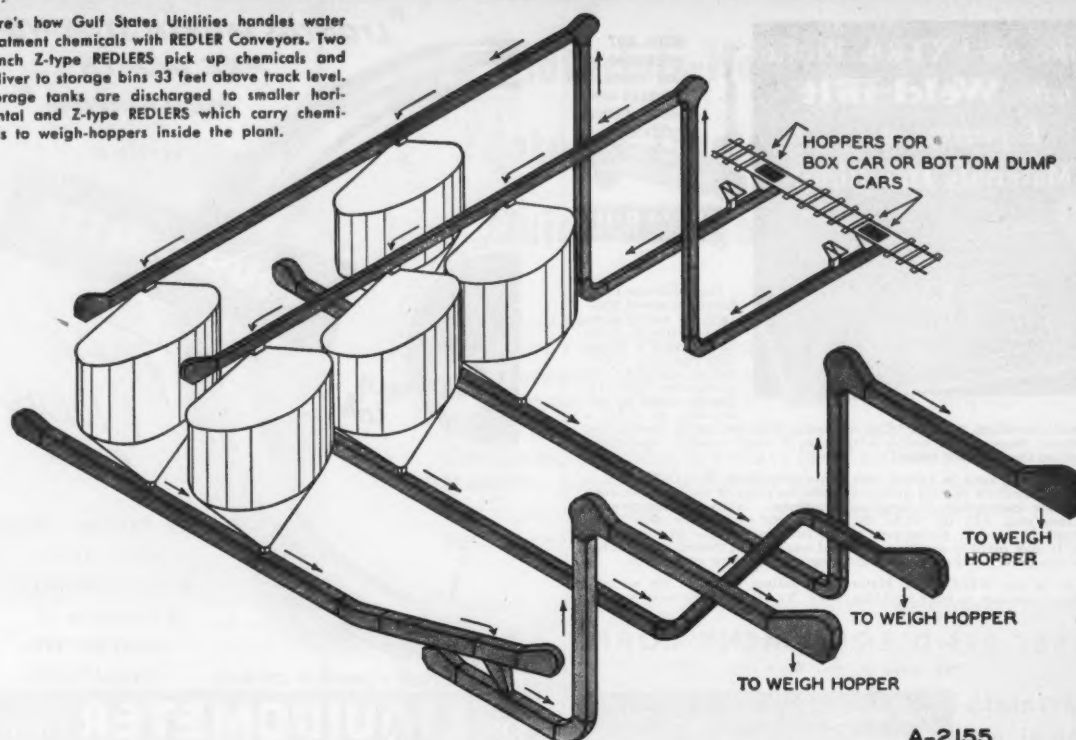
Uses: Where processing operations require constant opening and closing of in-plant doors by personnel and where those doors are subject to bumping by tractors and hand trucks or equipment.

Features: With lightweight, resilient rubber door, trucks can maintain a steady pace, butting the doors open without damage to the doors, truck, or merchandise. In addition, material forms an insulation barrier between rooms.

Description: Rubbair doors absorb shock from bumping and doors operate quietly. They do not gouge or scratch steadily, manufacturer reports, and resist abrasive wear. Doors have simplified hinging mechanisms which do not shear or loosen. Fingers cannot be jammed, nor can anyone be injured by being struck by the flexible rubber door.

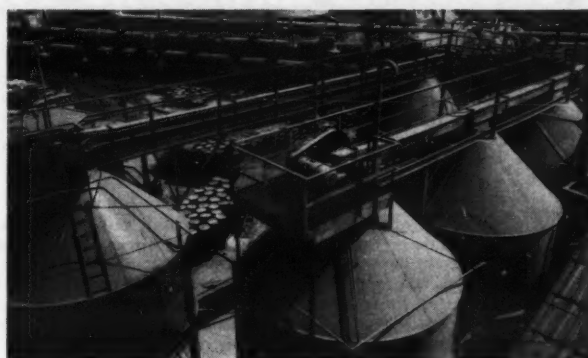
(Development of the Stic-Klip Company, Dept. CP, 50 Regent St., Cambridge 40, Mass. . . or for more information check CP 7004 on handy form, pages 2 and 3.)

Here's how Gulf States Utilities handles water treatment chemicals with REDLER Conveyors. Two 7-inch Z-type REDLERS pick up chemicals and deliver to storage bins 33 feet above track level. Storage tanks are discharged to smaller horizontal and Z-type REDLERS which carry chemicals to weigh-hoppers inside the plant.



A-2155

Water Treatment Chemicals Moved "IN-THE-OPEN"... with S-A REDLER Conveying System



STORAGE: Dust-free, weather-tight REDLERS discharge chemicals to top of storage bins. Fast unloading is easily done — 7.4 tons of soda ash per hour, 13½ tons of lime per hour and 16 tons of ferrisul per hour. In reclaiming, chemicals are fed to the plant at the rate of up to 9 tons per hour.

After fifteen years of efficient service from an S-A REDLER Conveying unit, the Gulf States Utilities, Baton Rouge, La., recently installed another such system including 5 new REDLER units shown here. It's fast, safe, clean... but more than that, the REDLERS operate "in-the-open"...their sealed casings insure dust-free, contamination-free movement of materials.

Compact outdoor storage is accomplished with S-A REDLER Conveyors that pick up chemicals from shallow track hoppers and discharge 35 feet above to any one of five storage tanks. Horizontal REDLERS combined with Z-type REDLERS deliver chemicals as needed to weigh-hoppers inside the plant. There's no spillage, no contamination and a minimum of absorption even during high-humidity weather.

If fast, safe, clean handling of materials in small space at low cost per ton is important in your business, then an S-A REDLER Conveying System can help you. Mail this coupon today.



STEPHENS-ADAMSON MFG. CO.

11 Ridgeway Avenue, Aurora, Illinois
Los Angeles, Calif., Belleville, Ontario

Engineering Division

Specialists in the design and manufacture of all types of bulk materials conveying systems.

Standard Products Division

A complete line of conveyor accessories including centrifugal loaders—car pullers—bin level controls—etc.

SealMaster Division

A complete line of industrial ball bearing units available in both standard and special housings.

Stephens-Adamson Mfg. Co.

11 Ridgeway Avenue, Aurora, Illinois

Please send me your Bulletin No. 140 on REDLER Conveyors.

Name

Company

Address

City Zone State

When inquiring check CP 7005 on handy form, pgs. 2-3

Take an **EXTRA** Profit
with **Weld-Bilt**
Experience in
Materials Handling!



One Midwest manufacturer saved \$90,000 on equipment cost alone because he called in a Weld-Bilt engineer FIRST, before deciding on expensive special-design units recommended to solve a difficult handling problem. Our engineer, experienced in cost-saving shortcuts, showed how simple adaptation of more standard equipment could do the job even better.

This is the kind of service you can expect from WELD-BILT... a thorough analysis of your problems based on years of varied experience and wide knowledge of handling problems... then a recommended solution that will do YOU the most good—in time and labor savings, in product protection, production speed-up—at the lowest cost. It may involve adapting standard equipment, custom-engineering new equipment—or merely realigning your present operations.

Call in the WELD-BILT Materials Handling Engineer for an economical solution to your problem today. You'll probably save money.

WEST BEND EQUIPMENT CORP.

323 Water St., West Bend, Wis.

**MATERIALS
HANDLING
ENGINEERS**

Portable Elevators • Pallet Trucks • Single
Stroke Lift Trucks • Two-Wheel Trucks •
Platform Trucks • Skid Platforms.

When inquiring check CP 7006 on handy form, pgs. 2-3

"LIQUIDS WORTH STORING
ARE WORTH
MEASURING"
with a



- FOR GAUGING LIQUIDS
OF ALL KINDS
- 100% AUTOMATIC
- APPROVED BY
UNDERWRITERS'
LABORATORIES

WRITE FOR COMPLETE DETAILS

THE LIQUIDOMETER CORP.
38-18 SKILLMAN AVE., LONG ISLAND CITY, N.Y.

When inquiring check CP 7007 on handy form, pgs. 2-3

Air CUTS BULK CHEMICAL HANDLING COSTS



VACU-VEYOR is safe, sanitary and dust free.

This completely enclosed, pneumatic system conveys up to 40,000 pounds of dry bulk material per hour. Handles any material in powder, pellet, granular or crystalline form.

Efficient, Low-cost Conveying

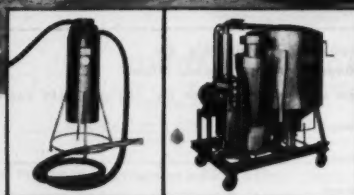
- Simple operation requires only one man.
- Eliminates sacking and all intermediate handling.
- Sanitary, direct conveying to skips, bins, vats or hoppers.
- Portable or fixed units for unloading trucks, ships or railroad cars.
- Conveys up to 200 feet horizontally—150 feet vertically.
- Clean, thorough pick-up from corners and inaccessible spaces.
- Prevents dust, eliminates dangers of silicosis.
- Flexible hoses ease around corners or other obstacles.
- Dependable operation with low maintenance costs.

Some of the many types of materials more efficiently conveyed by VACU-VEYOR pneumatic systems include:

Gypsum	Lime	Catalysts	Plastics	Lead Oxide
Bauxite	Soda Ash	Carbon Black	Salt	Cement

VACU-VEYOR pneumatic conveyors can be engineered and built to handle practically any desired capacity, with portable or fixed installations as required.

For further information, write today to Dept. J-1039-3



Unloader Unit
and Pick-up Nozzle

Dust Collector
and Vacuum Pump Unit

VACU-BLAST CO. INC.
BELMONT • CALIFORNIA

When inquiring check CP 7008 on handy form, pgs. 2-3

MATERIAL HANDLING

**Use of conveyor head pulley
provides source of power
for cleaner-brush...**

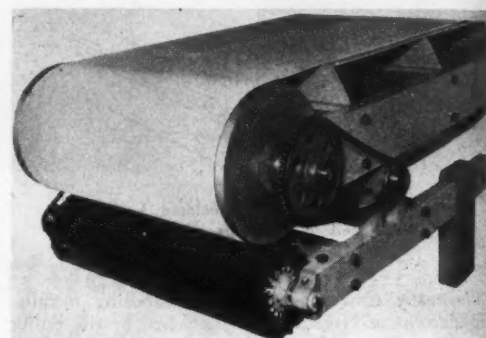
counterweights control pressure against belt;
speed can also be varied

Uses: For mounting cylinder brushes for conveyor belt cleaning.

Features: Drive assembly plan eliminates need for separate power unit by tapping conveyor head pulley.

Description: Counter-shaft, mounted across conveyor supports (see illustration) is chain-driven at one end by head pulley while other end is connected by chain drive to brush.

Frame which supports brush is suspended from counter-shaft with brush at front and adjustable counterweights in rear. Brush pressure against conveyor belt is controlled by moving these coun-



No need for separate power units

terweights. Brush speed is varied by changing diam of any four pulleys. Efficient conveyor cleaning depends upon a minimum 4-1 ratio of the peripheral brush speed to that of conveyor belt, manufacturer reports.

Fullergrit cylinder brushes are adaptable to this system. Brushes are made in standard conveyor widths with a variety of core and shaft sizes and fill materials.

(Developed by Industrial Div., Fuller Brush Co., Dept. CP, 3586 Main St., Hartford 2, Conn. . . or for more information check CP 7009 on handy form, pages 2 and 3.)

**All-purpose lift truck described
in 8-page catalog**

Manufacturer's all-purpose, inside-outside truck (Model YT-40) is described with specifications and on-the-job photos in 8-page illustrated catalog. Truck has 4000-lb capacity.

Form 1284 is issued by the Hyster Company, Dept. CP, 2902 N. E. Clackamas St., Portland 8, Ore. When inquiring specify CP 7010 on handy form, pages 2 and 3.

MATERIAL HANDLING

Gives manufacturer's data on gripper slings

Uses of woven wire cloth gripper slings, methods of determining required widths, dimensions and weight, along with respective prices are included in manufacturer's 16-page booklet.

Prices and data on the "Gripper" sling is issued by The Cambridge Wire Cloth Co., Dept. CP, Cambridge, Md. When inquiring specify 7011 pages 2 and 3.

Overload device protects chain-drives from taking excessive burdens

Uses: To protect processes and equipment from temporary loads which overtax mechanical drive systems.

Features: Unit has an eccentric sprocket shaft of 0.875" diameter



and can be adapted to chain size from 1/2 to 1 1/4". Electrical capacity is 10 amp at 115v, AC.

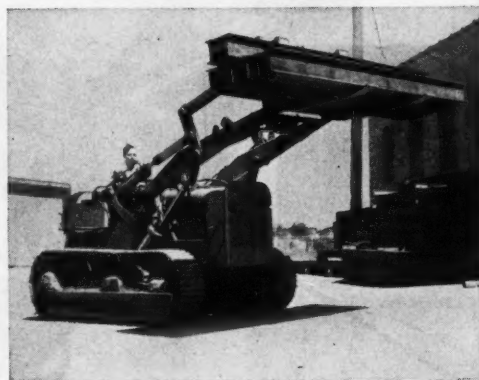
Description: By tripping a limit switch in event of excessive tension on the drive leg, unit protects chain drives of all types from overload. Eccentrically located sprocket is counterbalanced by a weight-loaded arm. Counterbalance is adjustable so device will operate at any chain tension up to 1000 lb.

(Device is product of Dept. D17, Lamson Corp., Dept. CP, 303 Lamson St., Syracuse 1, N. Y. When inquiring specify CP 7012 on handy form, pages 2 and 3.)

For more information on product at right, specify CP 7013 . . . see information request blank between pages 2 - 3.



DIGS TRENCHES — With Trench Hoe attachment, the HD-5G digs a flat-bottom ditch 27 in. wide and to a depth of 8 ft. Ideal for laying pipe, digging foundation footings, other vertical excavations.



SKIDS, LOADS, STACKS SOLIDS — Lift Fork attachment handles steel beams, pipe, lumber, packaged or palletized loads up to 4,000 lb. Works easily in unpaved yards where rubber-tired equipment bogs down.

OTHER attachments include Narrow Bucket, Rock Bucket, Rock Fork, Tine Fork, Crane Hook and Drag Bucket. Attachments may be interchanged in about 20 minutes by simply removing and replacing four pins. Ask your Allis-Chalmers dealer to show you how the versatile HD-5G can increase efficiency in and around your plant.

New Materials-Handling Technique Features Tractor Shovel with Quick-Change Front End

Equipment flexibility is an important answer to high production costs. This accounts for the popularity of the thousands of Allis-Chalmers HD-5G Tractor Shovels now in use in plants of all kinds. The 40-hp. crawler, with its wide range of front-end attachments, digs, carries, dumps, stockpiles, spreads or loads materials of all kinds. Its power and versatility enable it to replace a fleet of part-time specialists . . . to pay its way *full time* both in and around the plant.



HANDLES SAND, CLAY — ANY BULK With standard 1-yd. bucket, the HD-5G loads trucks, feeds hoppers and con-

veyers, builds stockpiles. Crawler tracks stand up in cullet and other abrasive material as only steel can.



SPEEDS YARD MAINTENANCE AND NEW CONSTRUCTION — Bulldozer or Angledozer blades quickly clear or level land for new construction, backfill trenches and foundations, maintain unpaved yard roads.



CLEARs SNOW — Big 2-yd. Light Materials Bucket quickly cleans up and loads snow from yard roads and parking lots. Also doubles output in coal, coke, cinders and other light materials.

ALLIS-CHALMERS

TRACTOR DIVISION • MILWAUKEE 1, U. S. A.

MATERIAL HANDLING

Dictionary of conveyor terms reduces misunderstanding

Fanciful words used to describe conveyors — words such as grizzly, grasshopper, wishbone, apron, mother, etc — are given their exact meaning for industrial specifications in 64-page manual which lists 1500 terms and shows line drawings of more than 80 types of conveyors and parts. Principal terms are also given in German, French, and Spanish.

Dictionary, "Conveyor Terms and Definitions" is available by remitting \$1.00 direct to the Conveyor Equipment Manufacturers Association, Department CP, One Thomas Circle, Washington 5, D.C.

Gasoline-operated lift trucks can be converted into unit burning cleaner fuel . . .

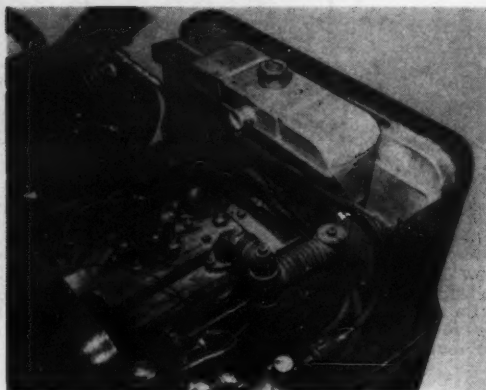
butane-propane mixture leaves no obnoxious fumes, unburned carbon, lead compound

Uses: For powering fork lift trucks with liquefied petroleum gas instead of gasoline.

Features: LPG, in normal usage, a mixture of butane and propane under pressure, burns without obnoxious fumes and leaves no unburned carbon, lead compound, or varnish deposits. Because it is a dry gas, there is no liquid to dilute cylinder lubricant or crankcase oil.

Description: To adapt an engine for LPG operation, it must be modified to operate at a high compression ratio (8 to 1). A cold intake manifold is used.

Basically, conversion unit consists of a heavy-duty fuel tank, vaporizer regulator, and a simple, rugged air-gas carburetor. Since the fuel is under its own pressure at all times, no fuel pump is required. Opening or closing of fuel line is accomplished through solenoid valve operating through ignition switch.



In LPG adaptation, note main fuel line from tank to filter and ignition solenoid. Hoses circulate hot water from radiator to water jacket in vaporizer



GACX—General American
Transportation Corp.

Bulk shipments of dry, pulverized materials travel fully protected and cheaply in a GACX Airslide car. This completely-sealed steel car replaces hundreds of individual containers that you now fill, close, protect, ship, unload, handle, empty and store. It eliminates waste; reduces shipping shrinkage; protects against infestation and contamination.

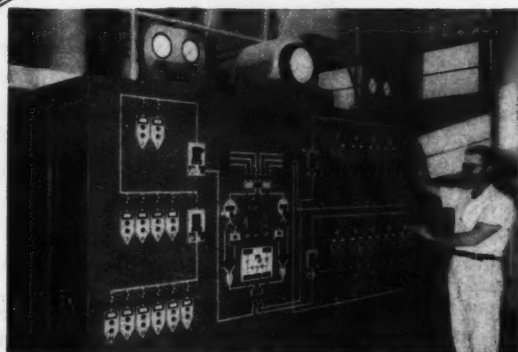
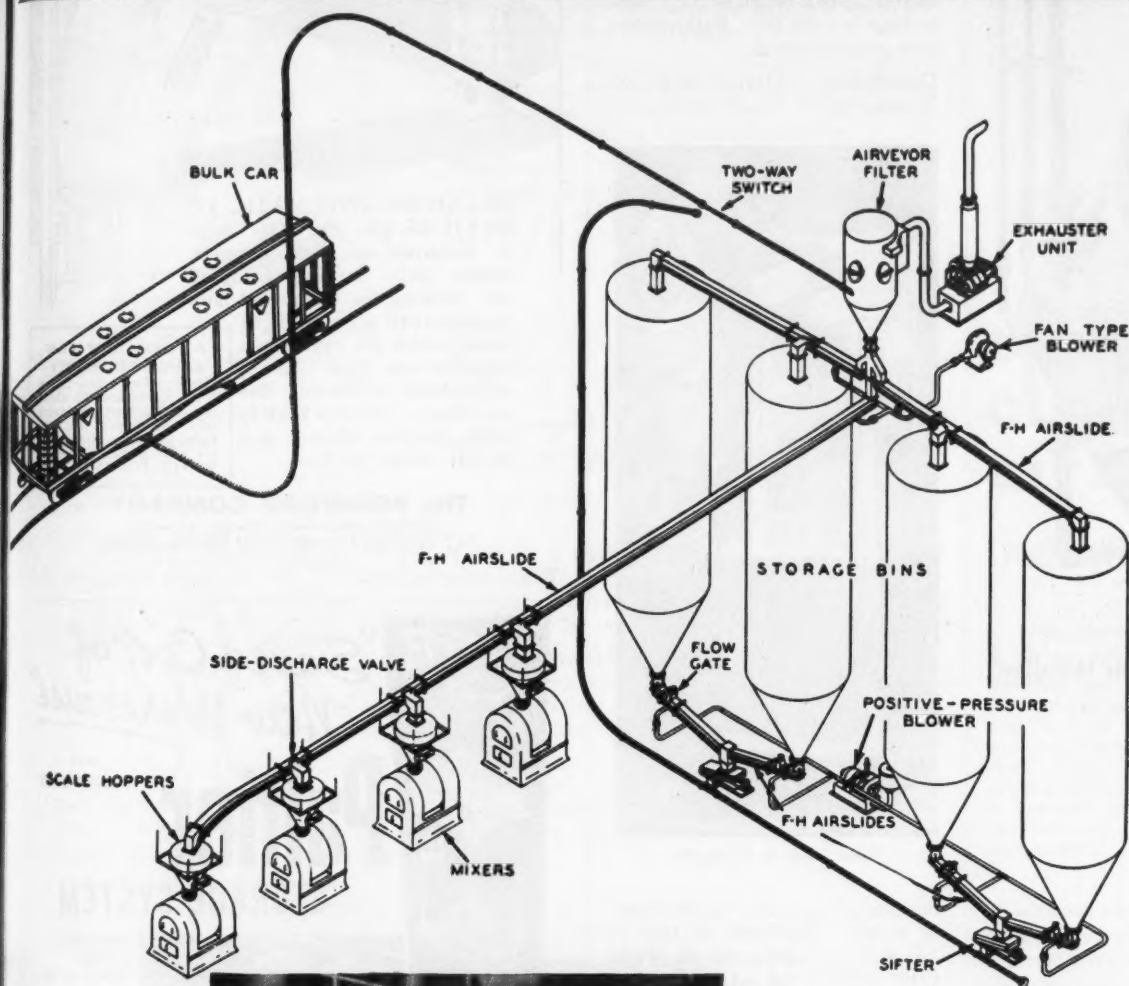
Then, upon arrival at destination, for clean, safe, efficient unloading and in-plant conveying, install the Airveyor, the pneumatic conveying system which has been proved by over twenty-five years of use in many

and varied industries. Thus, materials arrive in your plant . . . clean and sanitary with no loss in transit. Connection between Airslide car and the Airveyor System is quickly and easily made by one man. From this point, delivery is push-button controlled, entirely automatic, direct to storage or process anywhere in the plant.

No other system can offer you all the advantages of the Airveyor used jointly with the GACX Airslide car. Write for full information now.

Fuller FULLER COMPANY—CATASAUQUA, PA.
Chicago—San Francisco—Los Angeles—Seattle—Birmingham
pioneers in Air conveying

then unload and handle in-plant with **AIRVEYOR**



A-186T 2251

nothing moves but the material

When inquiring check CP 7014 on handy form, pgs. 2-3

Fuller
CONVEYS BY
AIR
CLEAN...SAFE...EFFICIENT

MATERIAL HANDLING

To refuel, fuel tank is removed and refilled from LPG storage unit. A hand pump can be used effectively. Spare tanks are available if standby is required. Fuel tank is rated at 1600 psi, is equipped with safety relief valve which by-passes pressure in excess of 375 lb. At present the equipment is available for factory installation on manufacturer's Trucloader, Clipper, Carloader and Dynatork Carloader models.

(Development of the Clark Equipment Co., Dept. CP, Battle Creek, Mich. . . or for more information check CP 7015 on handy form, pages 2 & 3.)

**Box can be dumped
from maximum lift
of fork truck . . .**

attachment is affixed to front face of truck carriage to handle drop-bottom box

Uses: Dumping attachment for manufacturer's fork trucks.

Features: Permits controlled dumping at any height up to maximum lift range of truck.

Description: Attachment is designed for use with drop-bottom boxes and is easily and quickly attached to front face of truck carriage. It hydraulically raises rear end of box through a hook engagement independent of fork action. Forks and front of box bottom are at same height while dumping load. Standard lifting hook is adjustable for both 11 and 15 cu ft boxes. Hooks for other boxes can be supplied.



Truck with dumping attachment

(Manufacturer is Yale Materials Handling Division, The Yale & Towne Manufacturing Company, Dept. CP, Philadelphia, Pa. . . or for more information check CP 7016, pages 2 and 3.)

**Shows how to weigh material
on moving belt**

Bulletin shows unit designed for continuous weighing of a steady flow of loose material on conveyor belts. It records rate of flow and totalizes accumulated tonnage.

Bul 10.18-3 is issued by Industrial Div., Minneapolis-Honeywell Regulator Co., Dept. CP, Wayne and Windrim Ave., Philadelphia 44, Pa. When inquiring specify CP 7017 on handy form, pages 2 and 3.

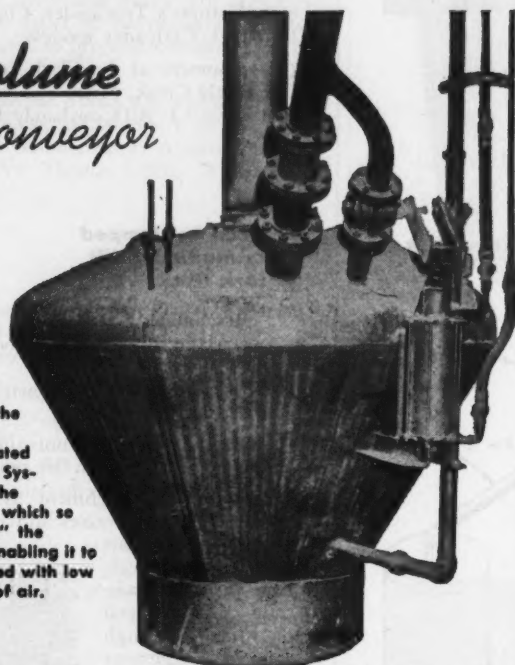
Robinson

Air Activated

Conveyor

The
Low-volume
Air Conveyor

Heart of the Robinson Air-Activated Conveyor System... the Activator which so "fluidizes" the charge, enabling it to be handled with low volumes of air.



Averages 1 Cubic Foot of Air per Pound of Materials Handled

Right here is one reason — and a stand-out reason — why the Robinson Air-Activated Conveyor is so economical in handling bulk dry-pulverized and fine-granular materials. Compressed air costs money so, if you can hold air costs down, as with the Robinson, you keep handling costs down. And no other power is necessary to operate a Robinson System.

The reason why the Robinson System can operate with such low air volume is due to the fluidized nature of the charge when transported through the pipes. Pressure alone will not suffice. It requires this Robinson Air-Activation or fluidizing effect. Material "flows" rather than blasts through.

Many Robinson Systems are in service handling a variety of products and in some cases are transporting them several thousand feet. This system may be just what you need for handling those dry, bulk materials in your plant. It has several outstanding features which we'll be glad to discuss at your convenience.

ROBINSON

Air Activated

A Division of
Morse Boulger Destructor Co.

CONVEYOR SYSTEMS

211-V EAST 42nd ST. • NEW YORK 17, N. Y.
Representatives in Principal Cities

When inquiring check CP 7018 on handy form, pgs. 2-3

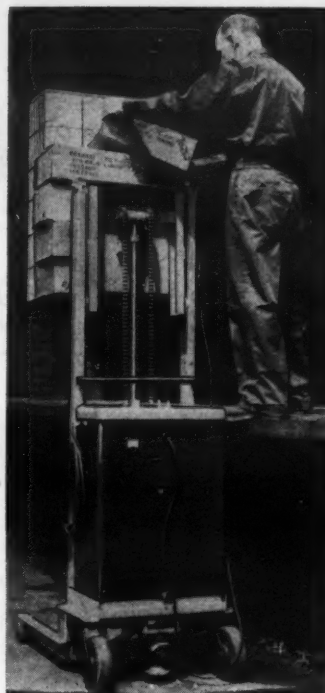
MATERIAL HANDLING

Two batteries power hoist with 750-lb capacity, pushbutton control

Uses: For lifting, lowering, transporting loads.

Features: Lifts loads of 750 to 1000 lb to a height of 5'. (Safety limit is 1100 lb.) Pushbuttons give precise control.

Description: Overall height of WorkLifter is 6' 6", with lift



Takes loads to 5' height

operating from 5 1/4" above floor to 5 feet. Baseframe of unit is 24" wide, 39" long overall. Platform consists of a 24" square steel plate with a 17" high back-plate.

Basewheels are two 8" diam solid rubber swivel casters and two 5" diam solid rubber fixed wheels, all equipped with roller bearings.

Hoist unit is an electric-hydraulic gear operated pump. "Up" and "Down" controlling pushbuttons are mounted on a 12" cord held in place by a take-up cable reel for operation from the spot most convenient to operator.

(Development of Economy Engineering Co., Dept. CP, 4511 W. Lake St., Chicago 24, Ill. . . . check CP 7019, pages 2 and 3.)

BRANFORD

GIVES MATERIALS THE GREEN LIGHT



BRANFORD PNEUMATIC VIBRATORS give the "GO" sign to materials in bins, hoppers, chutes, etc. Arching, bridging and sticking is eliminated and production moves right along under the continuous impulses of these sturdy, dependable vibrators. Remember, BRANFORD made the first vibrator and it still makes the best.

A FORM THAT CAN SAVE YOU MONEY
Get Branford's easy-to-use Data Sheets and fill them out. Branford engineers will recommend just the right vibrating equipment for your particular needs. WRITE TODAY!

THE BRANFORD COMPANY
continuing New Haven Vibrator Company
147 CHESTNUT STREET, NEW HAVEN, CONN.

When inquiring check CP 7020 on handy form, pgs. 2-3

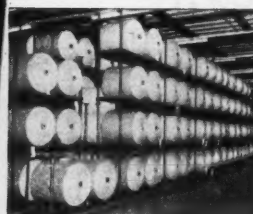


"Saved Cost of
New Warehouse"

says
PALTIER USER

Paltier

STORAGE SYSTEM



Increases storage space up to
75%
and more — decreases man handling as much as
75%

ASK US: PALTIER studies your storage problem — engineers and designs a system for your specific needs.

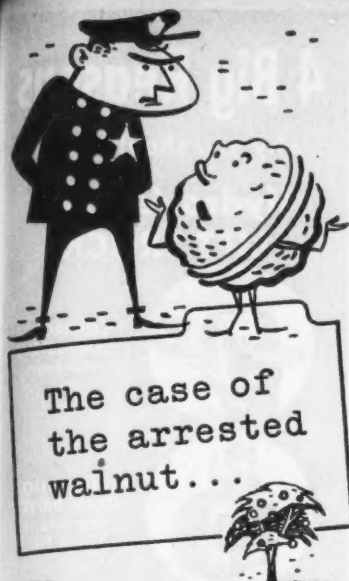
Many PALTIER installations pay for themselves "right from the start."

This booklet tells the PALTIER story, ask for it today.

THE PALTIER CORP.
1713 Kentucky St., Michigan City, Ind.

When inquiring check CP 7021 on handy form, pgs. 2-3

CHEMICAL PROCESSING



Not long ago there was a West Coast walnut grower faced with the problem of shaking a lot of arrested walnuts out of a lot of walnut trees.

With a note of perplexity in his voice, he asked us what to do, and we went to work with a CLEVELAND vibrator.



It gave those walnut trees a bad time... kept those walnuts moving like tomorrow's neighbor... and left the walnut grower beaming happily.

What's the problem in your case?
Just tell us... or ask for our detailed literature.

AIR and ELECTRIC



2706 Clinton Ave. • Cleveland 13, Ohio

When inquiring check CP 7022 on handy form, pgs. 2-3

MATERIAL HANDLING

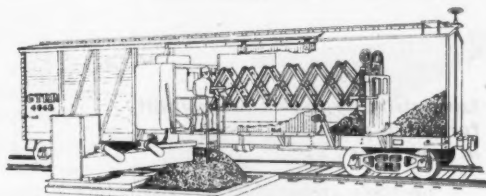
One-man operation of unloader empties box car of bulk in half an hour...

unit can be moved directly from one car to another on adjacent track

Uses: For unloading grain, dry chemicals, sand, cement and practically all bulk materials up to 2" lump size handled in box cars.

Features: Requires only one man operation. Manufacturer reports that an unloading operation can be completed within 1/2 hour. Can operate between two tracks to unload adjacent cars.

Description: In operation of the unloader, a pantograph arm equipped with a scoop reaches into the car until it meets an obstruction, drops down and withdraws a load of material, discharg-



Only periodic attention is required of operator

ing it to a track-side hopper. Cycle continues, automatically, with operator taking enough time from other tasks to direct the arm to different sections of the car.

Unloader occupies an area of approximately 8 x 24' when not in use and requires only a single concrete footing for track-side mounting as compared to conventional rotary or tilting car dumps.

(Development of the Stephens-Adamson Manufacturing Co., Dept. CP, Aurora, Ill. . . . or for more information check CP 7023 on handy form, pages 2 and 3.)

Photos, specs, and suggested uses of conveying equipment offered

Two-color, 18-page catalog has photos, specifications, and application suggestions on manufacturer's line of portable and permanent belt units, gravity wheel and roller conveyors in steel and lightweight aluminum, as well as industrial casters and hand trucks.

Catalog also explains and graphically shows how conveying equipment can be used as separate units, or combined to fit a variety of individual handling problems. Case history reports are included.

Cat GC-53 is issued by The Rapids-Standard Co., Inc., Dept. CP, 342 Rapistan Bldg., Grand Rapids 2, Mich. When inquiring specify CP 7024 on the convenient Reader Service slip located between pages 2 and 3.

ANOTHER REASON WHY YOU GET MORE FOR YOUR MONEY WITH CLARK...



ONLY CLARK ELECTRICS GIVE YOU THREE

independent braking systems

1 Hydraulic service brakes on the drive wheels: by incorporating the internal expanding double-shoe design with large braking surface, positive control of the truck at all times is assured for even the severest service requirement.

2 "Dead-man" brake on the armature shaft: this positive acting brake takes hold automatically the instant that the driver leaves the truck—disconnects the power, returns all controls to neutral, assures that the truck will remain stationary.

3 Dynamic braking by reversing current through the drive motor: this braking method permits smooth deceleration, with no grabbing; but positive automatic control eliminates all danger of damage to electrical motors and controls.

This three-way braking system is another exclusive feature of Clark electric fork trucks—the safest electric trucks on the market. It's another good reason for talking to your local CLARK dealer (see the Yellow Pages of your phone book) when you're in the market for electric fork trucks.

And remember: Only Clark has no axe to grind for any particular type of truck. We produce them all: gas, electric, diesel and L.P.G. fork trucks; POWERWORKER hand trucks; ROSS Carriers. For unbiased experienced counsel on all materials handling problems, see your Clark dealer today.

WRITE FOR FREE BOOKLET DESCRIBING THE FEATURES AND ADVANTAGES OF CLARK ELECTRIC FORK TRUCKS

CLARK EQUIPMENT

Industrial Truck Division
CLARK EQUIPMENT COMPANY
Battle Creek 9, Michigan

When inquiring check CP 7025 on handy form, pgs. 2-3

ALVEY Conveyors

In The Warehouse

Save Handling Time

**Both IN
and OUT**



Every time you MANhandle a package you add to the cost of your product, and nothing to its value. Therefore, it will pay you to let Alvey Engineers show you how direct savings can be made in your plant.

You are sure to benefit from the experience which qualified Alvey Engineers can offer you. Write or phone for an appointment.

ALVEY CONVEYOR MFG. CO.
9308 Olive Street Road, St. Louis 24, Missouri

BRANCH OFFICES IN PRINCIPAL CITIES -110

ALVEY

When inquiring check CP 7026 on handy form, pgs. 2-3

MATERIAL HANDLING

Up-to-date info on storage battery installation, maintenance, etc

Publication of a newly revised and up-to-date storage battery service manual has been announced by Battery Manufacturing Association. The 44-page publication (third edition of first issued in 1943) tells in non-technical language how battery is constructed, how it works, how to maintain battery stock, how to install and service automotive batteries, how to make certain battery repairs. A section is devoted to car generator systems. Definition of often-used electrical terms and a complete index are included.

To obtain "Storage Battery Technical Service Manual", remit 30 cents to cover printing and mailing costs to The Association of American Battery Manufacturers, Dept. CP, 2706 First National Tower, Akron, Ohio.

**Easy visibility, quick accessibility
for small parts featured
in tote pans . . .**

no tools are needed for assembling drawer-like units to suit production needs

Uses: For parts handling and storage in stock rooms, parts departments, tool cribs, maintenance and repair departments, as well as production departments.

Features: Easy visibility and accessibility of contents are listed among features. Units may be assembled without tools into infinite arrangements. Any pan may be removed, drawer-like, without disturbing its neighbors.

Description: Equipment includes standardized pressed metal pallets, tote pans and tote pan adapters and small parts bins. Groups or sections may be moved with lift trucks. Benches may be



Any arrangements can be assembled

4 Big Reasons

why you should buy a

Hydro^{Electric} LIFT TRUCK



CONTROL COMPLETE
at your finger tips



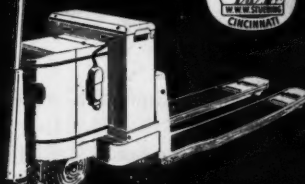
SEALED ALLOY GEAR DRIVE
for long service life



TWIN DRIVE WHEELS
with differential for ease of steering and good stability



HEAVY DUTY MOTOR
completely enclosed—highly efficient—easy accessibility



Compare the Hydroelectric features with any other "Driver Lead" Lift Truck. The Hydroelectric quality of construction merits your inquiry. Two driving wheels instead of one—50% easier steering—ease of maintenance.

Write for Catalogue #35 Today showing various models and their features. NOTE: The Dyna-Dual Power Unit is interchangeable on all models.

LIFT TRUCKS

INCORPORATED

7423 31 SPRING GROVE AVE. CINCINNATI 14, OHIO



When inquiring check CP 7027 on handy form, pgs. 2-3

CHEMICAL PROCESSING

MATERIAL HANDLING

assembled using the tote pans and adapters as a base. Bench bins segregate from 30 to 126 different parts; floor-type small parts bins accommodate up to 360 parts. Construction is of heavy gage sheet metal; finish is in three choices of industrial enamels.

(Development of the Bathey Mfg. Co., Dept. CP, 202 S. Mill St., Plymouth, Mich. . . . or check CP 7028 on handy form, pages 2 and 3.)

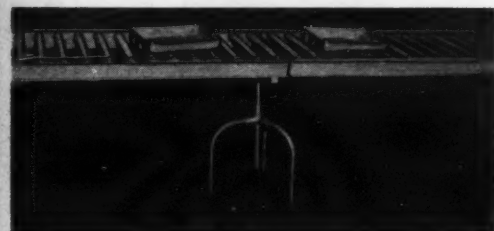
fabricated entirely of magnesium, roller conveyors are light for portability . . .

ease of handling permits one man to set up, dismantle or relocate system quickly

Uses: Where portability and gravity roller conveyor job spotting is a major consideration.

Features: Fabricated of magnesium, conveyor systems can be carried and set up or dismantled by one man in less time than normally required.

Description: Of standard construction throughout, conveyors can be installed as a complete sys-



Fabricated of magnesium

tem, or supplied in individual sections with couplers to match existing equipment. Portable magnesium stands in three height ranges (from 17 to 72" above floor level) are also offered.

(Developed by Magline Inc., Dept. CP, Pinconning, Mich. . . . check CP 7029, pages 2 and 3.)

How and why of storage batteries in 60 compact pages

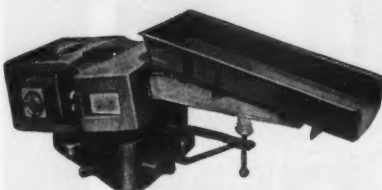
Sixth edition of storage battery "Red Book" (3 1/4 x 7 1/8") contains in its sixty pages several new tables and illustrations of new battery tools and auxiliary equipment.

Publication begins with brief treatise on theory of lead-acid battery. Four subsequent sections give detailed instructions on care and operation of batteries, maintenance, repairs, standard and special parts and technical tables.

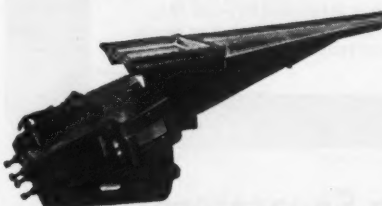
Sixth edition of storage battery manual is issued by Gould-National Batteries, Inc., Dept. CP, Trenton, N. J. When inquiring specify CP 7030 on handy form, pages 2 and 3.



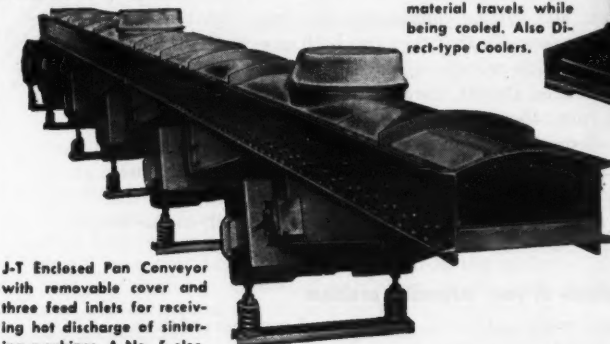
No. 1-B electric vibrating Feeder—for small-capacity operations up to 3500 pounds per hour. Ideal for laboratory use.



Jeffrey-Traylor No. 3 electric vibrating spark-proof Feeder with 12" x 30" open-pan deck. For feeding operations in hazardous atmospheres or under extreme moisture conditions.



Jeffrey-Traylor electric vibrating Spreader Feeder, 14" wide x 70" long with one edge tapered to spread to 55" width.



J-T Enclosed Pan Conveyor with removable cover and three feed inlets for receiving hot discharge of sintering machines. A No. 5 electric vibrating type, 25" wide x 45' long.

VIBRATING EQUIPMENT

**FEEDERS
DRYERS
PACKERS**

**COOLERS
CONVEYORS
SCREENS**

A type and size to meet requirements in continuous processing—at low over-all cost.

Absolute control over flow of wide variety of materials.

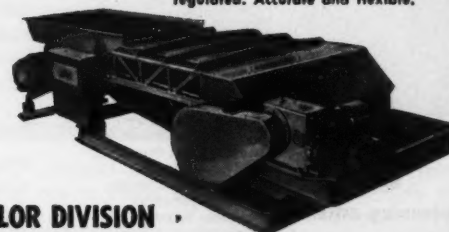
ULTIMATE IN FLEXIBILITY!

Literature Available

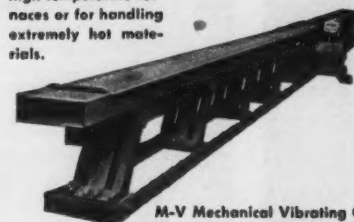
Right: Jeffrey-Traylor electric vibrating Indirect-type Cooler. Type HI-21F open type 21" wide and 18' long. Has solid plate conveying surface over which material travels while being cooled. Also Direct-type Coolers.



Below: Jeffrey-Traylor Type 450 WAY-TROL, a precision machine for continuous gravimetric feeding, batching and proportioning. The feeder is weight-controlled, delivery of material being automatically regulated. Accurate and Flexible.



Jeffrey-Traylor No. 4-L Water-cooled Feeder with 10" outside diameter x 4' long water-jacketed deck. For feeding to high temperature furnaces or for handling extremely hot materials.



M-V Mechanical Vibrating Conveyor for conveying abrasive, lumpy or rough materials, hot or cold, dry or wet, as well as fine materials. Up to 80' can be operated by one drive unit.

JEFFREY-TRAYLOR DIVISION

CAPACITIES—FROM A FEW OUNCES TO TWO THOUSAND TONS PER HOUR



THE JEFFREY

ESTABLISHED 1874
MANUFACTURING CO.

Columbus 16, Ohio

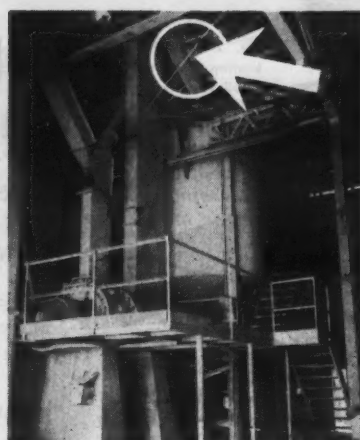
sales offices and distributors
in principal cities

PLANTS IN CANADA, ENGLAND, SOUTH AFRICA

**IF IT'S MINED, PROCESSED OR MOVED
...IT'S A JOB FOR JEFFREY!**

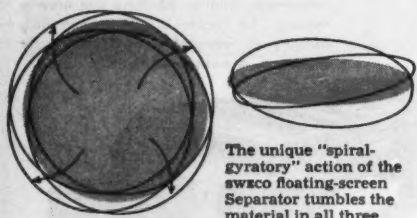
When inquiring check CP 7031 on handy form, pgs. 2-3

Quick screen change—easy adjustment!
This one Sweco Separator does
two screening jobs: Barium Oxide at 40-mesh.
Lamp Black at 20-mesh.



Way up there—and no special mountings!
No imparted vibration. That's why
this Sweco 2-deck for separating barite
ore can be perched in the rafters.

Barium Ore Processor finds Sweco Screen Separators serve dual-purpose



**Now "3-D"
screening action**

The unique "spiral-gyration" action of the sweco floating-screen Separator tumbles the material in all three directions at once... results in faster, more efficient separation... reduces blinding and clogging.

BARIAM PRODUCTS, LTD., Modesto, Calif., major producer of barium ore and barium compounds, has found the **SWECO** Separator so versatile that they use both one- and two-deck models at various processing stages. On one 48" single-deck sweco (pictured above), they screen both barium oxide grinding material (plus 40-mesh desired) and lamp black (minus 20-mesh desired). Complete adjustability, on-the-job... by changing screens, adding decks, adjusting eccentric weights... makes the **SWECO** the most versatile screen separator on the market. A single **SWECO** unit can separate material, wet or dry, into 2 to 5 fractions, using screens of 10 to 325 mesh.

Free analysis of your screening problem

sweco will make a detailed analysis and recommendation without cost to you. **SWECO** Separators are sold on a guaranteed performance basis.

Send for illustrated catalog



Engineers and Constructors... Manufacturers

**SOUTHWESTERN
ENGINEERING
COMPANY**

SWECO PRODUCTS:
Heat Exchangers
Screen Separators
Custom fabrication of
all types of steel and
special alloy vessels for
the process industries.

Serving industry in the
fields of Petroleum...
Chemicals... Mining
and Metallurgy... Food
... Rock Products...
Ceramics... Paper and
Pulp... Textiles...
Lumber... Rubber.

Please send me sweco Separator
catalog and detailed information
regarding the specific screening
problems checked below.

- | | |
|------------------------------------|----------------------------------|
| <input type="checkbox"/> Chemical | <input type="checkbox"/> Ore |
| <input type="checkbox"/> Clay | <input type="checkbox"/> Rubber |
| <input type="checkbox"/> Food | <input type="checkbox"/> Stone |
| <input type="checkbox"/> Lumber | <input type="checkbox"/> Textile |
| <input type="checkbox"/> Paper | <input type="checkbox"/> Wastes |
| <input type="checkbox"/> Petroleum | <input type="checkbox"/> Other |

Separator Division, Dept. 24-3
Southwestern Engineering Company,
4800 Santa Fe Avenue, Los Angeles 58
JEfferson 7131—Cable Address: **SWECOLA**

Name _____

Firm _____

Address _____

When inquiring check CP 7032 on handy form, pgs. 2-3

MATERIAL HANDLING

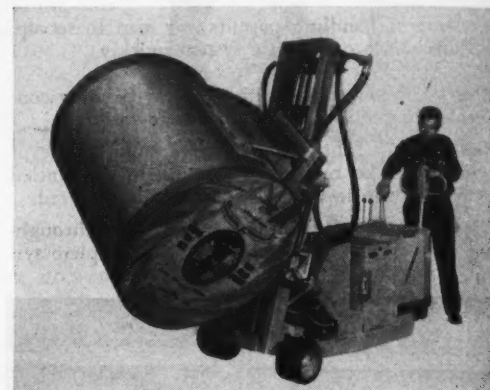
**Rolls can be clamped, rotated, hoisted,
lowered or tilted on walkie
with attachment...**

hydraulic action handles materials in di-
ameters from 24 to 42", raises them to 130"

Uses: For handling rolls of materials on manu-
facturer's walkie-type Powrworker line of electric
lift trucks.

Features: Attachment is especially suited for
work in congested areas or where aisle space is
at a premium.

Description: Roll handling attachment picks
up materials from either vertical or horizontal



Picks 'em up and rolls 'em over

positions, in and out of storage to a height of
130". Hydraulic clamps handle rolls from 24 to
42" diam and weighing up to 2000 lb. Electric
controls are located near operator for clamping,
rotating, hoisting, lowering and tilting.

(Development of the Clark Equipment Co., Dept.
CP, Buchanan, Mich. . . . or for more informa-
tion check CP 7033 on handy form, pages 2 and 3.)

Life of industrial truck batteries can be extended by adherence to do's and don'ts...

eleven points of preventive maintenance can
help delay the day of new purchases

Adding extra life to electric industrial truck stor-
age batteries becomes a simplified matter when
a good checklist of preventive maintenance is set
up and followed.

To assure full service from storage batteries and
thereby reduce purchase of new batteries, the
general service manager of a large electric-driven
industrial trucks manufacturer lists the following
11 precautions:

- 1) Keep filler caps closed except when filling.
- 2) Keep batteries clean and dry externally.
- 3) Keep electrolyte at proper level at all times.

MATERIAL HANDLING

- 4) Keep batteries on a suitable charging schedule.
- 5) Don't connect an ammeter across the battery terminals to test cell conditions.
- 6) Don't leave battery in a discharged condition.
- 7) Don't bring an open flame close to a charged battery or battery vents.
- 8) Don't permit a battery to overheat during charging.
- 9) Don't add water to acid — add acid to water.
- 10) Don't lay tools or pieces of metal on a battery.
- 11) Don't overfill cells.

(Information supplied by Automatic Transportation Co., Dept. CP, 149 W. 87th St., Chicago 20, Ill.)

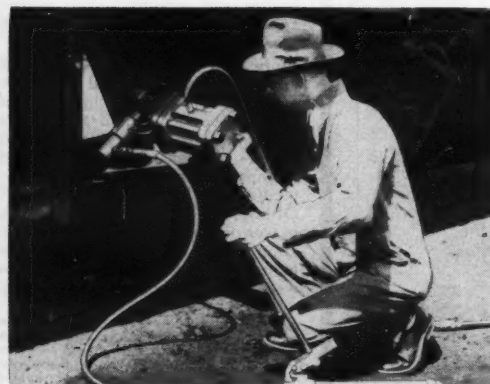
Quickly attached portable vibrator is versatile in unloading rail hopper cars . . .

unit reported to unload limestone cargo in two min with two men

Uses: For unloading railroad hopper cars of bulk material, or for keeping materials moving from or into hoppers, bins and chutes.

Features: Compactness and ease of handling are main features. Manufacturer reports this type of air vibrator has unloaded a car of limestone from 5" to dust by two men in two min.

Description: Type HCRR portable air vibrator is equipped with hydraulically-operated mounting



Makes quick work of emptying hopper cars

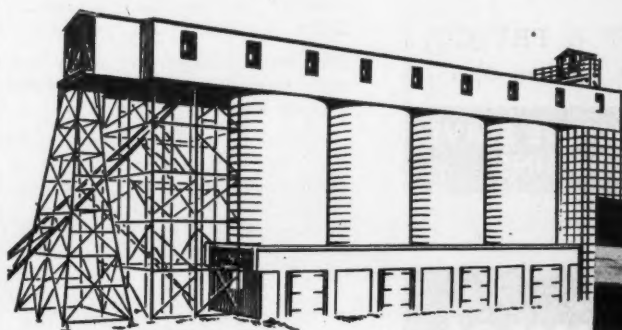
clamp for quick attachment. Unit includes vibrator with "C" clamp head and cylinder, hand-operated push-pull pump and 6' hose.

(Development of the Cleveland Vibrator Co., Dept. CP, 2828 Clinton Ave., Cleveland, Ohio . . . or for more information check CP 7034 on handy form, pages 2 and 3.)

Marietta

GREATEST NAME IN SILOS

**lets you
think in
YEARS-AHEAD
terms!**

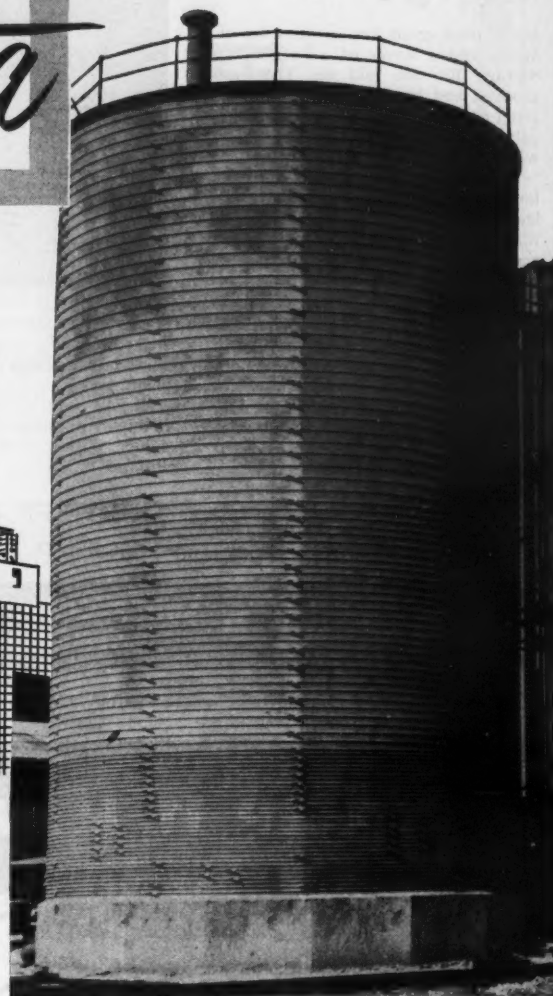


From foundation to roof, a Marietta Concrete Storage System is adaptable to every type of materials-handling.

Marietta engineers, thinking in years-ahead terms, have long recognized the unpredictability of the future as an important factor permanently tied to the apron strings of industry. Constructive thinking, in the past, with particular attention to this factor, has resulted in the production of modern storage systems purposely designed for immediate conversion or expansion without imposing penalties to meet any need.

There is no limit to the equipment that can be incorporated into a Marietta silo wall, roof or floor. A flexible Marietta Silo will accommodate any discharge system.

Concrete silos erected during 1916, the year



Marietta ventured into the industrial storage system business, are in useful operation today, standing as undeniable tributes to the wisdom, integrity and engineering prowess which have always been fundamental characteristics of The Marietta Concrete Corporation.

Whatever you store or handle, you'll be money ahead with a complete Marietta Concrete Storage System. Write today for particulars. Catalog upon request.

THE Marietta

CONCRETE CORPORATION

MARIETTA, OHIO

..... BRANCH OFFICES

501 Fifth Ave., New York 17, N. Y.

Hollywood, Florida

Pulaski Hwy. at Race Rd., Baltimore 21, Md.

805 Bessemer Bldg., Pittsburgh 22, Pa.

Box 1575, Charlotte, N. C.

PRECAST CONCRETE PRODUCTS FOR FARM, HOME AND INDUSTRY

When inquiring check CP 7035 on handy form, pgs. 2-3

Why they buy NEFF & FRY Storage Bins

In the photograph you see how the diagonal-ended staves of a Neff & Fry Storage Bin are laid up. They are grooved and beaded to lock together. Each course is encircled with as many galvanized steel rods as needed to withstand the thrust of the load.

Our bins (often termed silos or tanks) are used by scores of America's leading companies for handling more than 80 kinds of flowable bulk materials; notably, cement, coal, clay, grain, gravel, ore, sand, wood chips.

The reasons:

Formed under tremendous hydraulic pressure, the staves are rocklike in strength and density. They do not spall, rust, or burn.

Since the walls are only 2½" thick, the bins have great capacity in relation to outside diameter; no wasted ground area.

Despite the thin walls, the structures have sufficient load-bearing ability to carry heavy superstructures without additional supports.



Our wide experience enables us to make valuable suggestions regarding materials handling systems and equipment.

If you want to invest a few minutes in mighty profitable reading, ask for our folder, "Bins with the Strength of Pillars."

THE NEFF & FRY CO.

166 Elm St., Camden, Ohio

NEFF & FRY ▶ **SUPER-CONCRETE STAVE STORAGE BINS**

When inquiring check CP 7036 on handy form, pgs. 2-3

KEEP IT MOVING!



**Granular
or wet materials
noiselessly**

Whatever your particular problem may be — if you want to move materials by effective vibration, there is a Peterson Vibrolator to fit your needs perfectly. Spark-proof, all-directional vibration for bins, chutes, or hoppers. Require no maintenance or lubrication. Guaranteed instant self-starting every time. A variety of sizes and models including one which operates at ambient temperatures up to 1000°. Write for literature and complete specifications.

MARTIN

ENGINEERING COMPANY

KEWANEE 3, ILLINOIS

When inquiring check CP 7037 on handy form, pgs. 2-3

MATERIAL HANDLING

Outlines features and gives specs on hopper-mounted dust collector

General review with suggested applications, design features and specifications of manufacturer's hopper-mounted dust collector (Series A-658) is given in 4-page publication. Operation method and technical data also included.

Publication #TP-2-M is issued by Wallace & Tiernan, Dept. CP, Box 178, Newark 1, N. J. When inquiring specify CP 7038 on handy form, pages 2 and 3.

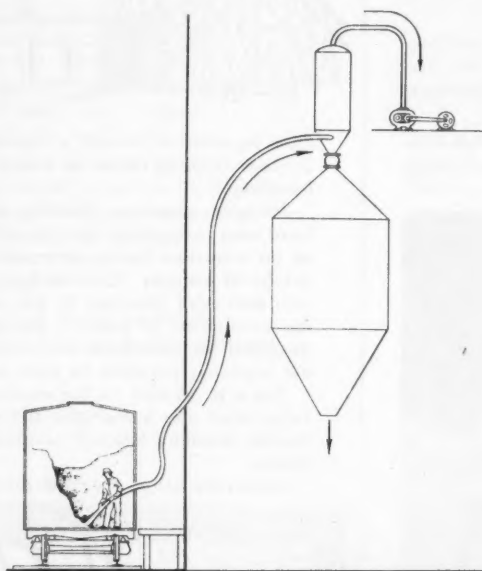
Simple operation, easy maintenance are vacuum conveyor unit design features . . .

conveys up to 40,000 lb/hr of bulk material, and from hard-to-reach places

Uses: For handling of materials such as dry bulky powders, grains, pellets or crystals.

Features: Eliminates many manual operations, since only one operator is involved to guide the pick-up nozzle.

Description: Vacu-Veyor conveys up to 40,000 lb/hr for complete removal of all material, even from corners or other hard-to-reach places. Unit



Eliminates bucket and shovel methods

conveys up to 100 feet vertically or 200 feet horizontally. Units are powered with electricity or gasoline or diesel engines. Nozzle operates up to 350 ft from unloader unit while vacuum and dust collector units can be located an additional 300 ft from the unloading point, if necessary.

Contamination cannot enter enclosed lines or unloader units; silicosis and respiratory disorders are

If **IBH** fits your plant — **BIG JOE**

**Reduces
Your
Costs!**



"In-Between Handling"

Short distance hydraulic manipulation of materials too heavy for manual handling yet not requiring high-priced power-driven equipment.

"IN-BETWEEN HANDLING" methods positively reduce materials handling costs in most plants, warehouses and terminals. The secret—applying the right tools to the right job.

More than forty "BIG JOE" models are specifically designed for IBH. With a choice of foot operated and battery operated 6 and 12 volt system units—fork and platform types—lever control, push button control or throttle control . . . guaranteed for quality . . . "BIG JOE" offers FLEET OPERATION at the price of a single power-driven fork truck. Fleet operation gives you the right kind of help where you want it, when you want it—today, tomorrow, every day.



Business Management will read with interest the informative booklet "IBH—The Economical IN-BETWEEN System for Handling Materials". Write for your copy.

"HYDRAULIC HANDLING FOR EVERY DEPARTMENT"

BIG JOE MANUFACTURING COMPANY
906-12 Jackson Blvd., Chicago 7, Illinois
© 1954 Big Joe Mfg. Co.

When inquiring check CP 7039 on handy form, pgs. 2-3

CHEMICAL PROCESSING

MATERIAL HANDLING

eliminated. Vacuum drawing fresh air into the area to replace expended air and material eliminates use of masks or breather tubes. Dust collector unit gathers dust and impurities, releases clean air into the atmosphere. Safety from harmful gases is provided when handling toxic materials, manufacturer reports.

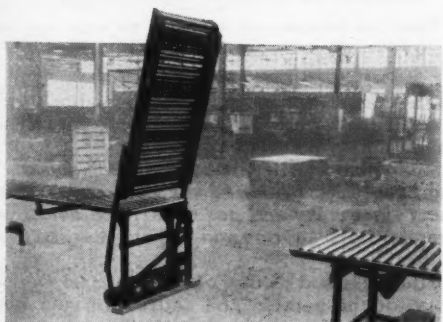
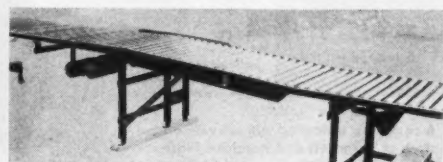
(Developed by Vacu-Blast Co., Inc., Dept. CP, Belmont, Calif. . . . check CP 7040 on handy form located between pages 2 and 3.)

Dense solids flow like fluids — brochure tells how

Eight-page, illustrated brochure tells of advantages of manufacturer's fluidized feeding system for handling dense phase solids in the same manner as liquids.

System allows control of transmission and metering of all types of material to be held within an accuracy of 3 per cent, even to vessels operating in excess of 700 psi. Power requirements as compared with pneumatic systems are listed.

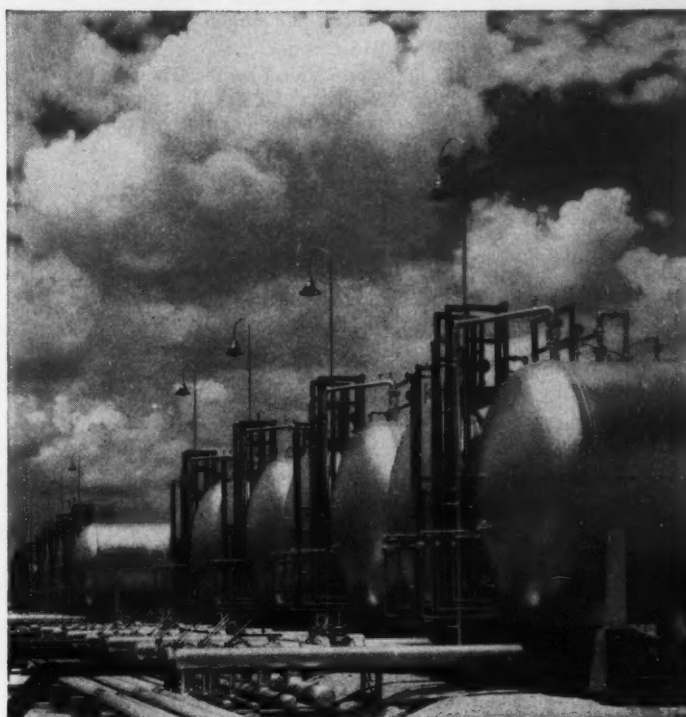
Brochure on Fluidized Feeding of Solids is issued by Sawyer Bailey Corp., Dept. CP, 1559 Niagara St., Buffalo, N. Y. When inquiring specify CP 7041 on handy Reader Service slip located between pages two and three.



Closed and opened shots of conveyor shown above illustrate how it can be used to move material through congested areas in plant or warehouse. Counterweights make it easy for truck operators or other workers to lift "drawbridge" for cross traffic

(Manufactured by Alvey Conveyor Mfg. Co., Dept. CP, 9301 Olive Street Road, St. Louis 24, Mo. . . . or for more information check CP 7042 on handy form, pages 2 and 3.)

For any pressure...in any length SPECIFY **PENBERTHY** LIQUID LEVEL GAGE SETS



Corrosion-resisting Penberthy gages and valves indicate accurately the level in vessels containing any kind of liquid. Construction is exceptionally sturdy. Materials conform to or exceed requirements of A.I.S.I., A.S.T.M. and/or A.P.I.-A.S.M.E. for maximum recommended pressures and temperatures. They are made from carbon steels, high grade bronze and malleable iron. Also available are chrome-moly and stainless steels and Monel metal. When specified, materials such as acid bronze, Everdur, nickel and Hastelloy are supplied.

For your special requirements, experienced engineering counsel and service are available to design and make valves and gages to meet your unusual conditions.

- For most requirements, Catalog 35 is a handy help in selecting and ordering. A copy will be sent upon request.

Established 1886

PENBERTHY INJECTOR COMPANY

Division of the Buffalo-Eclipse Corporation

1268 Holden Avenue, Detroit 2, Michigan

There's Certain satisfaction in PRODUCTS BY

PENBERTHY



TUBULAR
Meets Navy
specifications



REFLEX
Accurate,
easy-to-read



TRANSPARENT
Quickly determine
color and density

DON'T MISS THIS FEATURE
Union connections between valves
and gage permit removal of gage
without shutting down.

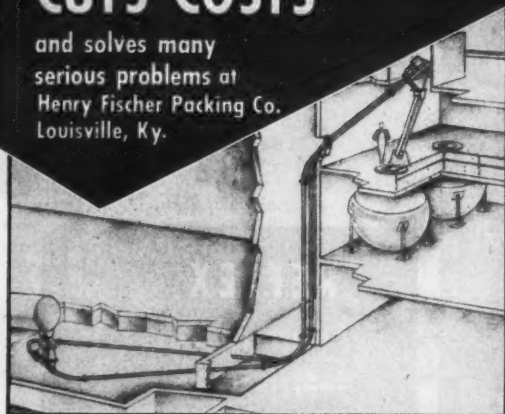
- CYCLING JET PUMPS
- EJECTORS
- INJECTORS
- ELECTRIC SUMP PUMPS
- REDUCTORS
- EXHAUSTERS
- SYPHONS

When inquiring check CP 7043 on handy form, pgs. 2-3

HERE'S HELP!

Hapman TUBULAR CONVEYOR CUTS COSTS

and solves many
serious problems at
Henry Fischer Packing Co.
Louisville, Ky.



before...

THE HAPMAN WAS INSTALLED, men pushed cart-loads of hashed animal entrails from first floor hasher to elevator—then to third floor cookers. **Result:** Much time lost in clean-up due to spillage on floor... large floor space needed to park carts... high heat loss when filling cookers.

now...

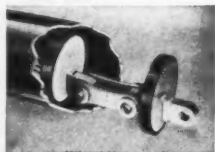
A LIQUID-TIGHT CONVEYOR carries this material from grinder... around corners and up three flights... discharging directly into one of two cookers. **Result:** Floor space saved, heat loss cut. No spillage, no time lost, *no problem!*

see...

HOW HAPMAN CONVEYORS can cut your costs—and deliver unique advantages in handling almost any bulk flowable material!

**GET FULL DETAILS—
WRITE FOR BULLETIN CP-354**

Conveyor Cross-Section
shows Flights and Sealed-
Pin Chain.



Hapman CONVEYORS, INC.
DIVISION HAPMAN-DUTTON COMPANY
KALAMAZOO MICHIGAN

When inquiring check CP 7044 on handy form, pgs. 2-3

MATERIAL HANDLING

Light and heavy-duty trailers described in publication

New "Trailer" catalog featuring several new items has been announced by truck and caster manufacturer. "Lo-Deck" trailer described has standard deck height of 8 inches, rather than the usual 14 inches. Catalog also includes manufacturer's line of industrial trailers and wagon trucks for light and heavy duty.

Cat No. TC-53 is issued by the Thomas Truck and Caster Co., Dept. CP82, Mississippi River, Keokuk, Iowa. When inquiring specify CP 7045 on handy form, pages 2 and 3.

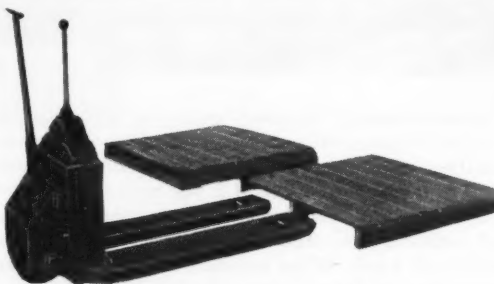
Both single and double faced pallets can be handled with equal ease on combination lift...

less than 30 lb pull required to move loads on 2000 lb capacity unit

Uses: For handling either single-faced or double-faced pallets.

Features: Designed to handle loads up to 2000 lb, unit requires less than 30 lb pull on a level hard concrete floor. Less than 25 lb effort on lifting handle is reported by manufacturer to raise load.

Description: Length of Model SD Combination Pallet Load Lift, not including forks, is 13".



30 lb pull for 2000 lb load

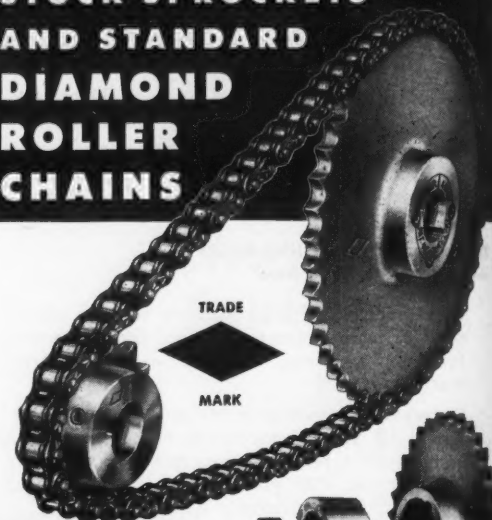
Forks are made from 24 to 72" long. Lowered height of truck is 31 1/4"; truck has full lift of 4".

Overall width outside of forks is 22"; width of each fork is 7 1/4". Tandem wheels, which carry load, are each 3 1/4" diam x 2" face. Wheels are available in aluminum, cushion rubber and plastic.

All four load wheels are equipped with sealed ball-bearings, two bearings per wheel. Load wheels are articulated so that they ride over obstructions with much less effort than single wheels. Front wheels are 8" diam x 2" face, equipped with roller bearings. Front wheels are available in semi-steel, cushion rubber and plastic.

(Development of Materials Handling Div., Market Forge Co., Dept. CP, 35 Garvey St., Everett 49, Mass. ... or for more information check CP 7046 on handy form, pages 2 and 3.)

Now Available STOCK SPROCKETS AND STANDARD DIAMOND ROLLER CHAINS



TRADE
MARK

from
Diamond
Distributors
Everywhere

Diamond Taper Lock Sprockets and Bushings are available in all popular shaft diameters. Your Diamond Distributor gives you "off-the-shelf, over-the-counter" service from his stock of Taper Lock Bushing sizes.

In smaller sizes, Diamond Sprockets with finished stock bores for all popular shaft sizes are available complete with Keyways and Setscrews.

◆ A complete, balanced, attractively priced stock of Sprockets and standard Diamond Roller Chain is now available for fast "off-the-shelf, over-the-counter" service.

◆ Taper Lock Sprockets and Bushings in the larger sizes are available with a full assortment of finished bores for all popular shaft sizes.

Now the correct Sprockets and high quality Diamond Roller Chains for new applications and replacements are as near as your telephone.

Your Diamond Distributor can furnish you Diamond Sprockets, Roller Chain and complete drives to meet emergency and normal service demands for all standard drive ratios and popular horsepowers—from stock!

See the classified section of your local telephone directory for the number and address of your nearest Diamond distributor.

DIAMOND CHAIN COMPANY, Inc.

Where High Quality is Traditional

Dept. 411, 402 Kentucky Avenue, Indianapolis 7, Ind.
Offices and Distributors in All Principal Cities

DIAMOND ROLLER CHAINS

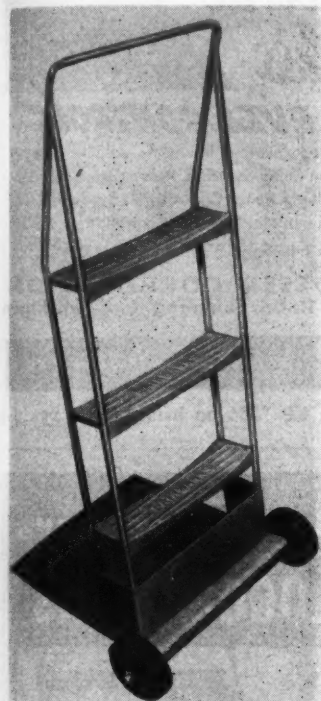
When inquiring check CP 7047 on handy form, pgs. 2-3

MATERIAL HANDLING

Two-in-one ladder-truck helps maintenance, hauling . . .

can be used for stock picking and for delivering the goods

Uses: As a hand truck for moving boxes, cartons, crates, kegs, bags, and odd-sized merchandise or as an elevation platform from which worker can perform jobs.



Double duty as ladder and truck

Features: Quick adaptability as a ladder saves time for maintenance men or for warehouse use.

Description: Specially-designed features of curved cross-bars and a solid noseplate give steel Step-Truk its advantages.

(Development of the Fairbanks Co., Dept. CP, 393 Lafayette St., New York 3, N. Y. . . . or for more information check CP 7048 on handy form located between pages two and three.)

For more information on product at right, specify CP 7049 . . . see information request blank between pages 2 - 3.



Here's Big News for YOU!



Announcing **MICHIGAN** **TRACTOR SHOVELS**

*. . . from engine to tires Power Transmission
engineered and manufactured by Clark*

Faster, heavier, with more horsepower than any tractor shovels of comparable capacity, MICHIGAN* Tractor Shovels will move material faster, last longer, cost less to operate.

Clark Torque Converter
Clark Power-Shift Transmission
Clark Planetary-Wheel Axles
Hydraulic Steering Booster
Low Level Bucket Tip-Back
Short Turning Radius
High Tractive Ability
Four Speeds Forward
Four Speeds Reverse
Lights—Standard Equipment

**Double-Acting Lifting and
Dumping Cylinders**
Gasoline or Diesel Engine

*Trademark of Clark Equipment Company

SIX MODELS . . . TO FIT EVERY NEED

Model 12-B—15 cu. ft. bucket drive, rear steer
Model 75-B—1 cu. yd. bucket drive, rear steer
Model 75-R—1 cu. yd. rear drive, bucket steer
Model 75-A—1 cu. yd. all-wheel drive, rear steer
Model 125-A—1½ cu. yd. all-wheel drive, rear steer
Model 175-A—2¼ cu. yd. all-wheel drive, rear steer

For full information concerning these important new machines, send for the MICHIGAN Tractor Shovel FACT-FOLIO—a handy file of specifications and action photographs. The coupon will bring your copy.

**CLARK
EQUIPMENT**

CLARK EQUIPMENT COMPANY
Construction Machinery Division
434, Second Street
Benton Harbor, Michigan, U.S.A.

Please send the MICHIGAN Tractor-Shovel FACT-FOLIO:

Name _____ Title _____
Firm Name _____
Address _____
City _____ Zone _____ State _____



Towmotor dumps pot of annealed castings into shakeout hopper at Cleveland plant of Eberhard Manufacturing Co.

TOWMOTORS
IN ACTION
IN U. S.
INDUSTRY

BOTTOMS UP!

Here's to TOWMOTOR, the fast and economical way of handling materials! Easy, too, because TOWMOTOR Power Steering reduces steering effort 80%! And speaking of power, the new "Cushioned Power" Diesels are as gentle and economical as ponies—with all the terrific strength of wild horses! There are dozens of other features that make special jobs like the one above, mere routine, and make *your* job twice as important to the boss. Send today for free booklet, "What Makes It Tick?" TOWMOTOR CORPORATION, Div. 2303, 1226 East 152nd Street, Cleveland 10, Ohio.

TOWMOTOR
THE ONE-MAN-GANG®

FORK LIFT TRUCKS and TRACTORS
SINCE 1919

TOWMOTOR ENGINEERED FOR QUALITY PERFORMANCE

When inquiring check CP 7050 on handy form, pgs. 2-3

MATERIAL HANDLING

Circular dolly designed especially for drum handling . . .

ball-bearing casters give mobility; units have 24" diam

Uses: For transporting heavy cylindrical containers.

Features: Swivel-type ball-bearing casters allow workmen to guide heavy loads easily. Welded steel cross members, 5 inch safety rim and balanced design prevent loads from tipping, eliminate accidents and possible injuries.



Accommodates drums up to 24" in diam

Description: Drum dolly accommodates 55 gal drum and similar containers which fit into 24" circular opening. Shipping weight of unit, finished in "safety" orange, is given as approximately 26 lb.

(Developed by Lexsuo, Inc., Dept. CP, 4815 Lexington Ave., Cleveland 3, Ohio . . . or for more information about manufacturer's product, reader may simply check CP 7051 on handy form located between pages 2 and 3.)

Guide gives info on facts about dock shelters

Detailed information in 20-page booklet is intended as reference guide to loading dock shelters and canvas curtains. Abundantly illustrated and with minimum of text, booklet explains various types of each product, and uses.

"Your Guide to Important Facts About Loading Dock Shelters and Canvas 'Wall' Curtains" is issued by Atlas Industries, Inc., Dept. CP, 1300 W. Washington Blvd., Chicago 7, Ill. When inquiring about manufacturer's product, reader may simply check CP 7052 on handy form located between pages 2 and 3.



LIQUID LEVEL CONTROLS

● Write for latest catalog covering the complete line of B/W Induction Relays, Induction Relay Switches, Relay Enclosures, Contactors and Starters, Multiple Pump Controls, Electrode Holders, Starter and Relay Combinations, Special Controls and Panels.

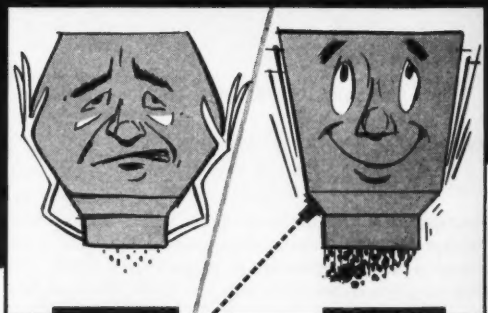
Controls will never trouble you, when you buy B/W

B/W CONTROLLER CORPORATION
2204 East Maple Road, Birmingham, Michigan

FIRST IN THE "FLOATLESS" CONTROL FIELD

When inquiring check CP 7053 on handy form, pgs. 2-3

SPO air vibrators FOR CLOGGED BINS



Before SPO

After SPO



Keep bulk materials in bins, hoppers and chutes jam-free with SPO pneumatic vibrators. These dependable, powerful, low cost units feature full-power starting, high-speed operation and a long trouble-free service life. Eliminate unnecessary production bottlenecks . . . get a steady flow with SPO vibrators.

1750-SI

SERIES 81

Write for Bulletin 50 for complete details.



SPO INCORPORATED

6331 Grand Division Avenue • Cleveland 25, Ohio

When inquiring check CP 7054 on handy form, pgs. 2-3

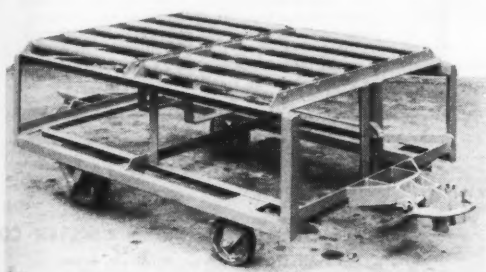
Mobile trailer with roller top fits into conveyor lines, wheels loads away . . .

design eliminates need for fork trucks at discharge points for loading

Uses: Unit was designed to permit pickup and transfer of packaged material from standard conveyor lines.

Features: By fitting into standard conveyor lines, trailer eliminates need for fork trucks at discharge points of conveyor and pallet loader lines.

Description: In operation, cartons or cases coming down conveyor line automatically load themselves onto trailer by riding over rollers. They



Self-loading trailer fits into conveyor line

are locked in proper position when brakes to retain rollers are applied. Trailer, designed to take two packaged units, can then be wheeled away.

Designated as Type A-308-78M, 3000 lb capacity trailer features two roller conveyor sections 30" from the floor. Trailer's live deck is made up of two six-roller sections. Rollers have 1.9" diam, are 30" long. Platform size is 49 x 72". Unit rolls on rubber tired wheels, is equipped with safety self-couplers.

(Development of the Mercury Manufacturing Co., Dept. CP, 4044 S. Halsted St., Chicago, Ill. . . or check CP 7055 on handy form, pages 2 and 3.)

Tells uses, features, description of pallet dolly line

Uses, features, and description of manufacturer's standard pallet dollies and Universal reefer dolly are outlined in illustrated four-page bulletin.

Pallet dollies (in twelve models) having capacities from 2000 to 5000 lb, are designed to roll and steer over any floor without use of swivel casters. Standard production sizes are 30 x 40" and 40 x 48". Larger sizes can be supplied. Reefer dolly measures 40 x 30", has standard capacity of 3000 lb. Special sizes up to 4000 lb capacity can be furnished.

Engineering Bul #310-40 is issued by Roll-Rite Corp., Dept. CP, 801 Jefferson St., Oakland 7, Calif. Specify CP 7056, pages 2 and 3.

Why V-Belts with CONCAVE SIDES Last Longer!

(U.S. PAT. NO. 1813698)

Prove this yourself!



Take any straight-sided V-Belt (Fig. 1). Bend it—as it bends in going around a pulley. The sides will at once *bulge out* (Fig. 1-A). Clearly, those bulging sides will press *unevenly* against the V-pulley—and this causes *extra wear* at the points shown by the arrows (Fig. 1-A).

Now bend a Gates Vulco Rope with CONCAVE SIDES (Fig. 2)



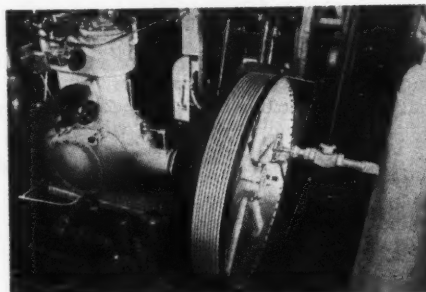
Instead of *bulging*, the precisely engineered CONCAVE SIDES merely *fill out to fit exactly* in the sheave groove (Fig. 2-A). The sides press *evenly* against the V-pulley. All wear is distributed *uniformly* across the *full width* of the Gates Vulco Rope—and this means *longer belt life* and *lower belt costs* for you!

When you buy V-Belts, be sure to get the V-Belt with the CONCAVE Sides—the Gates Vulco Rope!



Gates Engineering Offices and Jobber Stocks are located in all industrial centers of the United States and in 71 foreign countries.

THE GATES RUBBER COMPANY
DENVER, U.S.A.



Typical Gates Vulco Rope Drive—the Gates V-Belts are built with Concave Sides to insure longer belt wear.

When inquiring check CP 7057 on handy form, pgs. 2-3



Get this new 48-page idler data book

Here's complete information on industry's most comprehensive line

COVERS Link-Belt's entire roller bearing idler line of 34 types in seven basic designs. Includes all the facts you need for ordering and application: dimensions and specifications, selection and spacing data, recommended lump sizes, accessory information. Get your copy of Book 2416 today. Use the handy coupon below.

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BELT CONVEYOR IDLERS

LINK-BELT COMPANY
Plants: Chicago, Indianapolis, Philadelphia, Colmar, Pa., Atlanta, Houston, Minneapolis, San Francisco, Los Angeles, Seattle; Scarborough, Toronto and Elmira, Ont. (Canada); Springs (South Africa); Sydney (Australia). Sales Offices, Factory Branch Stores and Distributors in Principal Cities.

LINK-BELT COMPANY
220 S. Belmont Ave., Indianapolis 6, Ind.
Please send me immediately a free copy of your 48-page Idler Book 2416.

Name
Position
Firm
Address
City Zn. State

When inquiring check CP 7058 on handy form, pgs. 2-3

MATERIAL HANDLING

Lift truck bearings get their due with one-minute lubrication under pressure . . .

centralized system at 2500 psi assures proper servicing to all points

Centralized lubrication systems, allowing one man to lubricate an industrial truck in less than 60 seconds, have been added to features of manufacturer's industrial trucks.

Major advantages of system include complete and thorough lubrication of truck is minimum time and



One minute grease job

with minimum effort. Even hard-to-reach points under truck receive necessary lubrication. Starving or over-lubrication of bearings is prevented.

An injector for each point is connected to bearing by a tube carrying grease at 2500 psi from central pumping unit. Each time pumping pressure is applied, each injector measures out a prescribed amount of grease, variation of which is controlled by an adjustable knob. Indicator stem on each injector provides visible evidence that grease is being properly metered.

("Centro-Matic" Centralized Lubrication System was developed by Lincoln Engineering Co. Industrial trucks equipped with such systems are available from the Elwell-Parker Electric Co., Dept. CP, 4205 St. Clair Ave., Cleveland 3, Ohio . . . or for more information check CP 7059, pages 2 and 3.)

Offer compact, comprehensive data on air vibration equipment

Sixteen-page, illustrated catalog describes manufacturer's line of air vibration equipment including metallic-impact types and air-cushioned vibrators. Operating photos show variety of uses for vibrators. Line includes 29 mountings and 14 piston diam sizes for producing a wide range of vibrating intensities. Engineering Data sheet and price list are included.

Cat 109 is issued by the Cleveland Vibrator Co., Dept. CP, 2828 Clinton Ave., Cleveland, Ohio. When inquiring specify CP 7059A on handy form, pages 2 and 3.



Thomas JAK-TUNG One-Handling System

TRUCKS & STORES LOADS WITHOUT UNLOADING

This double-purpose truck is designed for use with power truck or hand lift. When loads are to be moved long distances, a power lift platform or fork lift truck is used. For short hauls, spotting of loads and handling in close quarters, the JAK-TUNG Lift Unit is best. Either way loads can be trucked and stored without costly rehhandling. Available with chemical resistant tires and "Job Suited" superstructures.

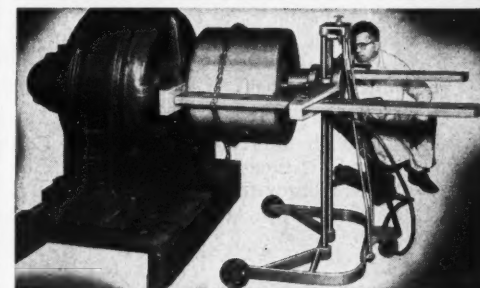


Send for free literature.

THOMAS TRUCK & CASTER CO.
415 Mississippi River, Keokuk, Iowa

When inquiring check CP 7060 on handy form, pgs. 2-3

THE QUICK, EASY WAY TO REMOVE AN OBJECT FROM A SHAFT!



The Improved Hydraulic

PULLEY PULLER

For Removing Pulleys, Wheels, Gears, Coupling, Sheaves, etc.

One man can do it in minutes — even if objects are stuck fast. No crowbars, sledges or blowtorches. No damage to equipment. Puller is adjustable — easy to move — rugged. Hundreds being used in industry.

• 5-ton size on wheels \$101.75
• 20-ton size on wheels \$319.00
• 50-ton size as shown \$720.50

F.O.B. Factory

Write for complete information - Catalog T

INDUSTRIAL ENGINEERING EQUIPMENT CO.
122-124 E. 4th St. Davenport, Iowa

When inquiring check CP 7061 on handy form, pgs. 2-3

CHEMICAL PROCESSING

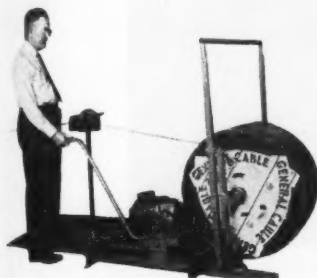
MATERIAL HANDLING

Handles heavy reels of wire or cable with ease

Uses: Lifts reels of wire and cable for transferring contents from one reel to another with a power drive.

Features: Measuring meter indicates how much is being wound on to rotated reel.

Description: Machine is made in two types: one as a plain lifter, the other as lifter and rotator. Reel is revolved by friction drum



Lifts heavy reels for transferring

on its outer edge. No shaft keys or locking devices are necessary. Foot-switch motor control leaves hands free to guide material.

(Lifter-rotator is product of the Neal Co., Dept. CP, 2806 Leavenworth St., Omaha 2, Nebr. . . or check CP 7062, pages 2 and 3.)

Shows uses and features of tractor-shovel

Illustrated 16-page catalog contains action views of 1 cu yd tractor-shovel. Important details are fully highlighted. Included are pictures and detailed specifications of all seven sizes of "Payloaders".

Catalog describing Model HR 4-Wheel tractor-shovel can be secured by ordering form #255 from The Frank G. Hough Co., Dept. CP, 744 Seventh Street, Libertyville, Ill. When inquiring specify CP 7063 on handy form, pages 2 and 3.

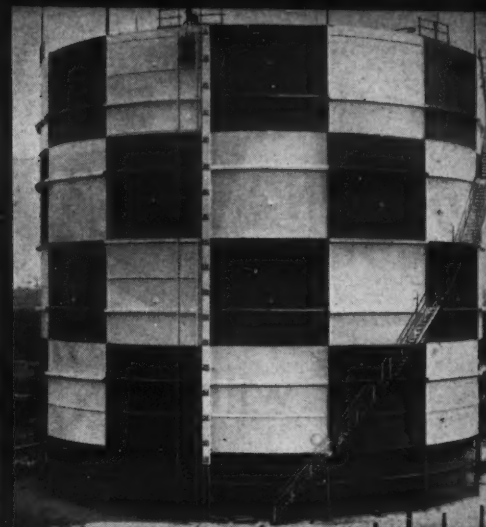
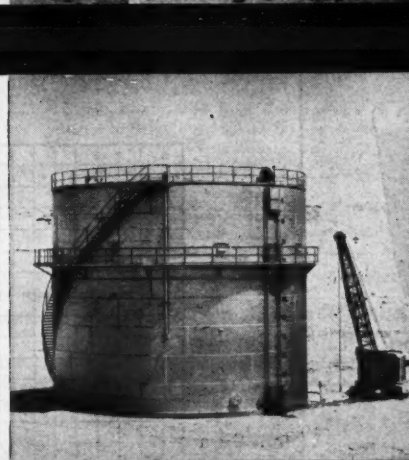
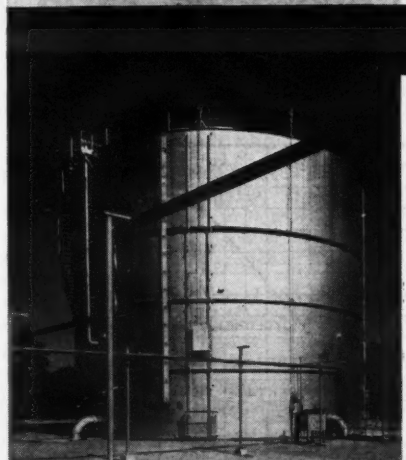
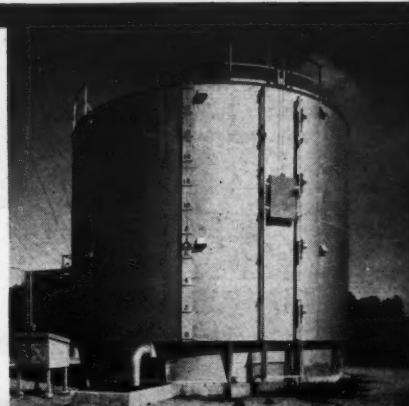
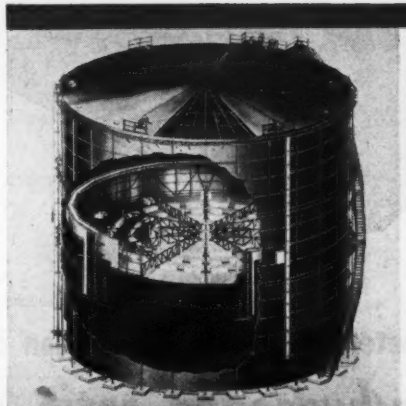
For more information on product at right, specify CP 7064 . . . see information request blank between pages 2 - 3.



simple! proved in use!

Wiggins Gasholder

BY GENERAL AMERICAN

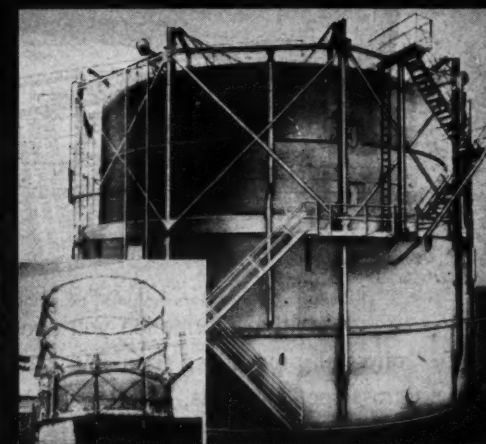


The only gasholder that uses

**NO WATER
NO TAR
NO GREASE**

The only gasholder that assures you

**NO WEATHER WORRIES
NO OPERATING COSTS
NO MAINTENANCE PROBLEMS**



You can convert your old style gasholders to get the Wiggins advantages

GENERAL AMERICAN



TRADE MARK

TRANSPORTATION CORPORATION

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Chicago 90, Illinois

Offices in principal cities

Be sure to get the performance record on the only modern gasholder before you plan any gasholder construction.

**HEAT
ON? TRANSFER IT
QUICK**

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with
this
**Super
Slide
Chart**



*Get the information you need on physical properties, sizes and gauges, cross-sectional area, velocity constants, pressure, weights and other technical data on Carpenter Stainless Tubing for Heat Exchanger applications. It's all condensed in this handy slide chart. Write for it today, no obligation of course.

THE CARPENTER STEEL COMPANY

Alloy Tube Division, Union, N.J.

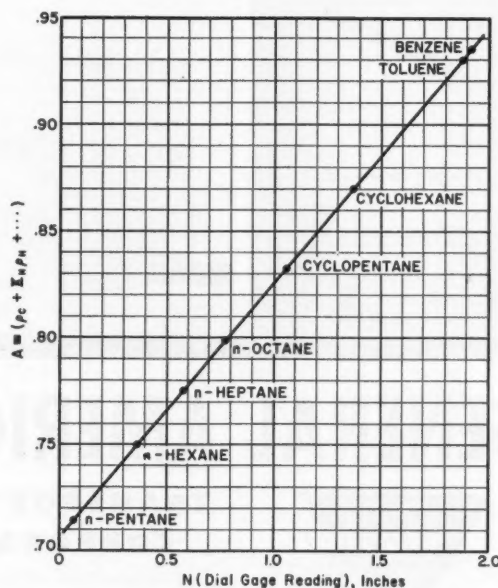
When inquiring check CP 7065 on handy form, pgs. 2-3

*for the
laboratory*

Operator places a 10 ml sample in cell
at right of meter



Using beta-ray meter, semi-skilled technician can
tell carbon/hydrogen ratio in five minutes



Calibration curve shows linearity of reading for paraffins, cyclic hydrocarbons, and aromatics

**... and accuracy is 100% better
than that of conventional 4-hour test**

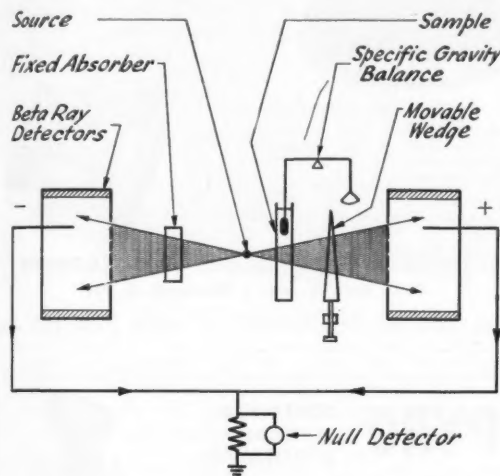
While percentage of hydrogen is an important quality figure in petroleum products and hydrogenated products, the four-hour combustion train test has made checking of the carbon-hydrogen ratio a last resort. By using radioactive strontium 90 and beta-rays which it furnishes, an instrument has been built which can cut time for this test to five minutes. It also boosts accuracy by more than 100 per cent.

Beta-ray H/C Meter is designed to test liquid hydrocarbons. It is expected to be adapted to use in pharmaceuticals, plastics, hydrogenated fats and oils, other chemical products. Tests have already shown that small amounts of constituents other than hydrogen and carbon can be accounted for with only slight corrections. These tests also indicate that individual determinations can be made with a statistical probable error of only 0.02 weight per cent hydrogen — combustion technics usually result in a statistical probable error of about 0.05 weight per cent hydrogen.

In making a test, sample cell is filled with a 10

ml sample of the hydrocarbon. By means of a control knob, operator adjusts movable wedge (right side of schematic) until galvanometer indicates that currents in the two ionization chambers are equal. Since polarity of the detecting ion chambers are opposite, this is indicated by a null reading. And since beta-ray absorption by the fixed absorber at this point must equal absorption by sample and wedge, position of the wedge as noted by dial is an index of the hydrogen to carbon ratio.

Measurement of the ratio is made possible by the fact that carbon atoms, six times as heavy as hydrogen atoms, are better absorbers of beta rays.



Schematic shows how wedge is able to balance one beam against the other. Absorption difference between wedge and fixed absorber is accounted for by absorption in sample

Safeguards are incorporated in the instrument. Radiation source of strontium 90 is a sealed capsule encased in a thick copper block. In addition to providing shielding, this "aims" the rays in two equal beams. Additional shielding is built into walls of the ionization chambers. Finally, operator is protected by heavy walls of the meter housing.

So effective is this combination of shielding that in manufacturer's tests no stray radiation could be detected with a 0 to 25 milliroentgens per hour meter.

Another feature of the instrument is the conventional specific gravity balance which is built into it. This makes possible a determination of specific gravity of the liquid while test for hydrogen to carbon ratio is in progress.

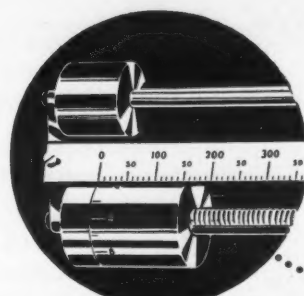
(Beta Ray H/C Meter was developed in the Engineering Research Department of Standard Oil Company (Indiana) and is being manufactured under license by Central Scientific Co., Dept. CP, 1700 Irving Park Rd., Chicago, Ill. . . . or for more information reader may simply check CP 7066 on handy Reader Service slip located between pages 2 and 3.)

FOR LABORATORIES AND PLANTS

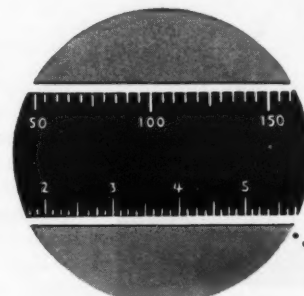
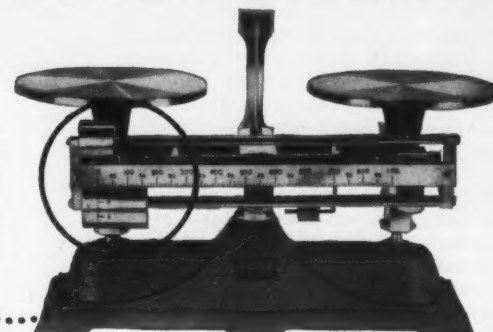
The New OHAUS Industrial Balances

Features

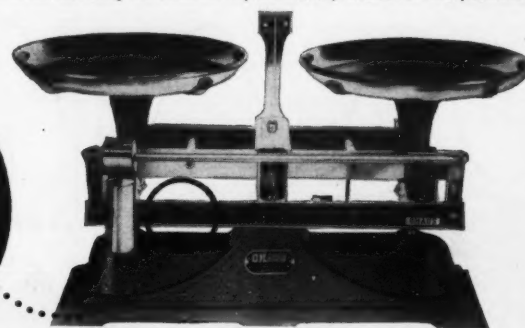
- Light weight — high strength Duralumin beam
- Capacity to 5 kg... sensitivity 0.5 gm
- Patented self-aligning agate bearings
- Precision hollow ground tool steel knife edges
- Dust proof bearing covers
- Clear reading etched graduated beams



The Micrometer Poise . . . makes it possible to weigh a complete range from 0.5 gram to 1000 grams without the use of loose weights. Poise is moved along the beam for rapid traverse, rotated for final positioning.



Single Beam with Dual Calibrations . . . both metric and airoirdupois standards make the balances extremely versatile. All models have a capacity of 5 kilograms and a sensitivity of 0.5 gram.



H-2845 Balance with Micrometer Poise. Capacity 5 kg, sensitivity 0.5 gram; beam calibrated 1000 x 0.5 gram. Furnished with 7" diameter satin finish stainless steel plates. Equipped with tare beam and poise of 1 pound capacity **\$90.00**

H-2845-10 Balance with Micrometer Poise. Capacity 5 kg, sensitivity 0.5 gram; beam calibrated 1000 x 0.5 gram. Furnished with 9" diameter nickel plated brass pans. The removable pans are of equal weight and can be used interchangeably on either side of the balance. With tare beam and poise of 1 pound capacity. **\$95.00**

H-2846A Balance — Single beam with dual calibrations. Furnished with 7" diameter stainless steel plates; beam calibrated 500 x 5 grams and 16 x 1/8 ounce.

Complete with tare beam of 1 pound capacity. **\$80.00**

H-2846B Balance — Single beam with dual calibrations. Furnished with 7" diameter stainless steel plates; beam calibrated 100 x 1 gram and 4 x 1/2 ounce. Complete with tare beam of 1 pound capacity. **\$77.50**

H-2847A Balance — Single beam with dual calibrations. Furnished with 9" diameter nickel plated brass pans; beam calibrated 500 x 5 gram and 16 x 1/8 ounce. Complete with tare beam of 1 pound capacity. **\$85.00**

H-2847B Balance — Single beam with dual calibrations. Furnished with 9" diameter nickel plated brass pans; beam calibrated 100 x 1 gram and 4 x 1/2 ounce. Complete with tare beam of 1 pound capacity. **\$82.50**

HARSHAW SCIENTIFIC
DIVISION OF THE HARSHAW CHEMICAL CO.
CLEVELAND 6, OHIO

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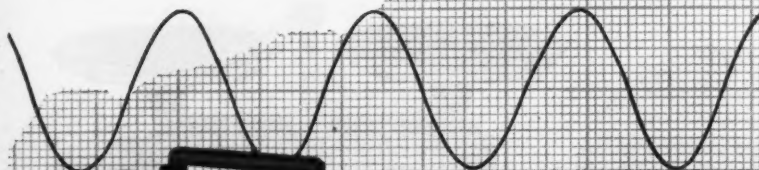
When inquiring check CP 7067 on handy form, pgs. 2-3

frequency synthesis analysis simplified...

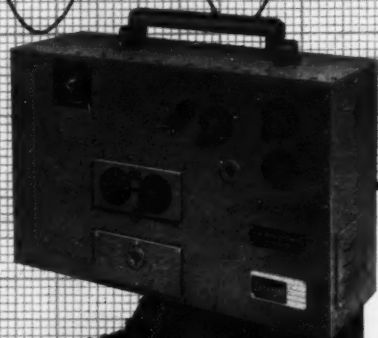
The Sine Wave Generator is designed as a convenient tool to determine transfer functions of components in automatic control systems and to define the physical properties of existing plants to which control systems are to be added. Data is acquired by the frequency synthesis method in which sinusoidal forcing functions are applied to the system and measurements taken of amplitude and phase shift of the output response. For further information on this or other special purpose devices, or assistance in solving your particular computing-controlling problems, consult LIBRASCOPE.

$$\frac{1}{S(S+T)}$$

$$\alpha \left[\frac{1+Ts}{1+\alpha Ts} \right]$$



$$x = A \sin 2\pi ft + B$$



THE SINE WAVE GENERATOR

Especially adaptable to pneumatic devices in industrial control systems. It generates sinusoidal motion of adjustable frequency, amplitude and mean position and provides auxiliary electrical signals for phase reference.



Computers and Controls

LIBRASCOPE

1607 FLOWER STREET • GLENDALE, CALIFORNIA

A SUBSIDIARY OF GENERAL PRECISION EQUIPMENT CORPORATION

Engineers, physicists and mathematicians in search of interesting assignments, rapid advancement, and job security are requested to write Dick Hastings, Personnel Director.

When inquiring check CP 7068 on handy form, pgs. 2-3

FOR THE LABORATORY

Five reagents available at new purity...

NH₄F, AgCl, Sb, resorcinol, H₂O₂ meet given ACS specs

Ammonium Fluoride—reagent for silicates available with actual analysis on each label. Low limits (chloride max, 0.001%; heavy metals, 0.0005%) have been set until ACS specs are established. Available in 1/4 and 1-lb lots.

Silver Chloride—For use in infrared spectrophotometry, silver plating, electroplating, and Smith test for free acids. Specifications are copper, 0.001%; iron, 0.001%; heavy metals, 0.005%; nitrates, 0.001%. One-oz, 4-oz, 1-lb lots.

Antimony—For use in research on matches, fireworks, explosives, alloys, thermoelectric piles. Manufacturer's reagent lump Antimony has low impurity limits to aid duplication in trace-sensitive research. One and 5-lb lots.

Resorcinol—As a reagent for zinc, indicator for reducing substances in filter paper chromatography for analysis. Also used by synthesists for making fluorescein and other dyes. Available in 4-oz and 1-lb lots.

Hydrogen Peroxide—Upgraded to meet ACS quality. For use in sulfuric acid digestions of organic materials, and for some nitric acid digestions. Sulfate limit is 0.0005%; heavy metals max is 0.0001%. Available in 1-lb lots.

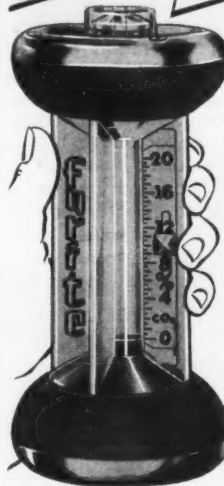
(Reagents are available from Fisher Scientific Co., Dept. CP, 717 Forbes St., Pittsburgh 19, Pa. . . or check CP 7069, pages 2 and 3.)

Describes polyethylene laboratory ware

Folder shows line of polyethylene laboratory ware. Included are 11 everyday laboratory items of all sizes ranging from polyethylene policemen to 13 gal carboys.

Folder "Avoid Costly Breakage" is issued by E. Machlett & Son, Dept. CP, 220 E. 23rd St., New York 10, N. Y. When inquiring specify CP 7070 on handy form, pages 2 and 3.

CONVENIENT LOW COST ACCURATE



OXYGEN and CO₂ Analysis

FYRITE Gas Analyzer shown at the left is available in two models—one for direct CO₂ analysis, the other for direct oxygen analysis. Both instruments employ the volumetric method of gas analysis involving selective absorption of CO₂ or oxygen by a chemical absorbent. A complete analysis can be made in 40 seconds. Accuracy is within one-half of one per cent CO₂ or oxygen. Absorbing fluids are furnished in individually bottled refills, and replacement of the fluid in the instrument merely requires removing the four screws that hold the cap assembly in place.

Write for Leaflet I-700

Available Individually or As A Set

FYRITE Gas Analyzers can be supplied individually—in a metal instrument chest complete with rubber aspirator, rubber and metal sampling tubing and filter, as shown at the right; or in a "Duplex Kit" which comprises both CO₂ and Oxygen Analyzers together with one complete gas sampling assembly for connecting either instrument to the desired sampling point.



BACHARACH Industrial Instrument Company

7301 Penn Avenue • Pittsburgh 8, Pa.

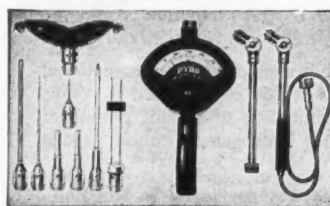
When inquiring check CP 7071 on handy form, pgs. 2-3

PYRO SIMPLIFIED OPTICAL PYROMETER

Any operator can quickly determine temperatures on minute spots, fast-moving objects and smallest streams. Completely self-contained. No calibration charts or accessories needed. An accurate, direct reading Pyrometer that pays for itself by helping prevent spoilage. Weighs 3 lbs. Available in 5 temperature ranges (1400° F. to 7500° F.) Ask for free Catalog No. 85.



PYRO SURFACE PYROMETER



Designed to meet all plant and laboratory surface and sub-surface temperature measurements with selection of thermocouples and extension arms. The IMPROVED PYRO is quick acting, accurate, lightweight and rugged. It features large 4 1/4" direct reading scale, automatic cold end junction compensator and shielded gas housing—all combined to offer highest precision, accuracy and dependability. Available in five standard ranges from 0-300°F to 0-1200°F.

Ask for free Catalog No. 168

THE PYROMETER INSTRUMENT CO.

BERGENFIELD 28, NEW JERSEY

New Plant and Laboratory Manufacturers of Pyro Optical, Radiation, Immersion and Surface Pyrometers for over 25 years.

When inquiring check CP 7072 on handy form, pgs. 2-3

CHEMICAL PROCESSING

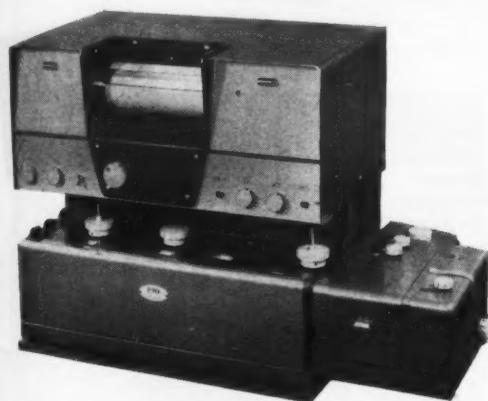
FOR THE LABORATORY

Automatic spectrophotometer
requires little attention,
gives rapid analyses . . .

"robot" unit matches or exceeds accuracy of manually-operated recorders

Uses: For colorimetric and spectrophotometric analyses.

Features: "Robot" spectrophotometer operates virtually unattended, can plot as many as three



Automatic unit can run three samples simultaneously

samples simultaneously in a total time of 12 seconds. Automatic operation requires manual attention only for changing samples, chart paper, and scanning regions.

Description: Instrument is built around manufacturer's quartz monochromator DU Spectrophotometer, combines accuracy of parent model with rapid operation.

Unit measures and records per cent transmittance in the 210-1000 μ region of the spectrum. Span from ultraviolet to near-infrared is broken up into many wavelengths selectable by instrument.

Up to three samples may be recorded at one time, and each curve is plotted in a different color. Recording time for one sample is 8 sec; two samples, 10 sec; and all three samples in 12 sec.

Model achieves greater accuracy than with manually-operated instrument because it always operates at the highest sensitivity possible for signal-to-noise ratio.

It is possible to vary the number of points being plotted for a specific range, thus allowing operator to plot just a few points to eliminate unnecessary detail in search of highlights. He may then rescans any particular area at close spacing for pertinent detail.

Automatic unit of instrument may be attached to standard DU Spectrophotometer with no change in monochromator.

(Model DR Spectrophotometer is manufactured by Beckman Instruments, Inc., Dept. CP, S. Pasadena, Calif. . . or for more information, check CP 7073 on handy form, pages two and three.)

Rigid testing of Explosion-Proof CONDULETS* assures safety and long dependable service

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laboratories and modern
manufacturing combine to
give you top quality

Laboratory testing is one of the key operations in the production of electrical equipment of the highest quality. Crouse-Hinds laboratories are equipped with the latest scientific instruments and staffed with expert technicians.

Products are constantly tested to make sure that they are being made to withstand field conditions. New devices are tested to predetermine their meeting or surpassing the requirements of Underwriters' Laboratories.

The photographs at the right show three of the many testing operations that are done in the Electrical Laboratory. It is equipped with apparatus for making both alternating and direct current tests, heat tests, pressure tests and many others.

Close cooperation between Crouse-Hinds laboratories and manufacturing departments is one of the reasons why Condulets have been the "Standard of Quality" for nearly fifty years.

Specify CONDULETS on every job. They're made right . . . to serve you better . . . and last longer.

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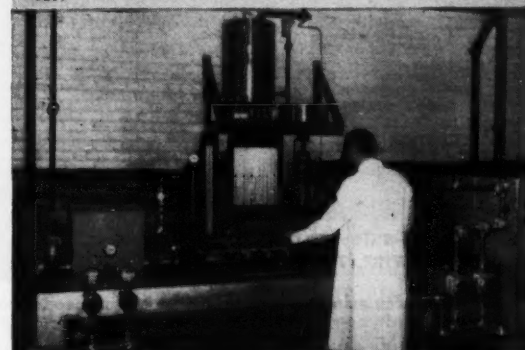
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CONDULETS · TRAFFIC SIGNALS · AIRPORT LIGHTING · FLOODLIGHTS



Probing for maximum exterior operating temperature on a Type EVA Explosion-Proof Lighting Fixture using a multiple point recording potentiometer.



Adjusting carburetors and flow meters to create a predetermined explosive mixture within an explosion-proof Condulet for an explosion test.



Photographing the pressure wave in the Oscilloscope to determine the maximum explosion pressure within an explosion-proof Condulet that is behind the concrete wall.

When inquiring check CP 7074 on handy form, pgs. 2-3

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LABORATORIES
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**JUNIOR SIZE
DRYER**



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7'-6" WIDE, 7'-1" HIGH**

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Selective recirculating air flow — up-draft, downdraft or cross convection
Uses warm air, steam, natural gas fuel, or electricity
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SARGENT—designed Dryer
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A. L. MERRIFIELD, 215 Grove Ave., Cincinnati 13, Ohio
W. S. ANDERSON, Carolina Specialty Co., Charlotte, N. C.
HUGH WILLIAMS & CO., 47 Colborne St., Toronto 1, Canada

When inquiring check CP 7075 on handy form, pgs. 2-3

FOR THE LABORATORY

Digest lists lab equipment

Illustrated 8-page digest contains comprehensive listing of foreign and domestic instruments and products available for laboratory use. Bulletin, issued monthly, is handy reference to lab materials for institutions, hospitals, industrial researchers.

"Daigger Laboratory Digest" is issued by A. Daigger & Co., Dept. CP, 159 W. Kinzie St., Chicago, Ill. When inquiring check CP 7076, pages 2 and 3.

Longer service life feature of lab flask heater

Uses: For general laboratory heating applications.

Features: Manufacturer guarantees heater against burning out for one year, even with repeated use.

Description: Forma-Heater is made of woven metal cloth built in to metal case. Two-way clamps permit easy horizontal or vertical setup; optional swing-away clamps offer ease of loading and unloading while on frame supports.

Stock flask capacities are from 500 to 5000 ml. Temperature ranges over 1000°F on standard models, up to 600°F on thermo-regulated models.

(Forma-Heater is product of the Burrell Corp., Dept. CP, 2223 Fifth Ave., Pittsburgh 19, Pa. . . or check CP 7077 on handy form, pages 2 and 3.)

Up-to-minute information on Industrial timepieces

Full line of Minerva timepieces for industrial, medical and research purposes are shown in 12-page illustrated catalog. Time and motion study features are described and coil-spring construction explained. Both stopwatches and wrist watches are shown as well as stopwatch support that frees both hands.

Bul 153 is issued by M. Ducommun Co., Dept. CP, 1 West 47th St., New York 19, N. Y. When inquiring specify CP 7078 on handy form, pages 2 and 3.

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AGITATOR
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QUICKLY
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7 FRONT STREET SAN FRANCISCO 11

When inquiring check CP 7079 on handy form, pgs. 2-3

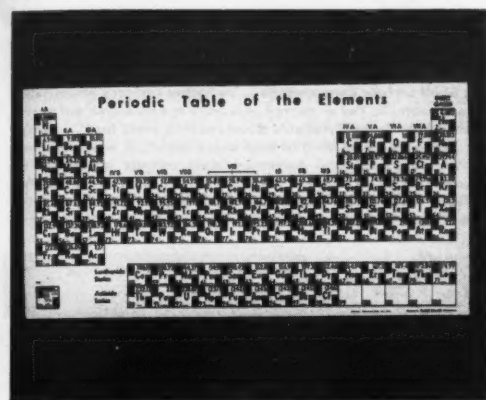
CHEMICAL PROCESSING

FOR THE LABORATORY

**Periodic chart of the elements
furnishes up-to-date info
in handy form . . .**

changes in layout make chart easy to use

Designed in accordance with recommendations of the American Chemical Society Committee on Atomic Weights and the Commission on Atomic Weights of the International Union of Pure and Applied Chemistry, periodic chart has been prepared from the standpoint of better layout and arrangement. This is particularly true with respect to the placement of atomic weights and numbers in relation to the symbol of the element.



Gives information on elements at a glance

Chart is lithographed in dark blue and red on heavy plastic coated paper with metal binding and eyelets for hanging. No. 12051, 29 x 59", gives atomic symbol, atomic number, name of element and atomic weight or mass number. No. 12053 is similar but also includes electronic configuration, natural occurring isotopes (stable and unstable in the order of their abundance), principal oxidation states, valence electrons, melting point, boiling point and density.

(Product of Central Scientific Co., Dept. CP, 1700 Irving Park Rd., Chicago 13, Ill. . . or for more information check CP 7080 on handy form, pages two and three.)

Determines thermal values of solid or liquid fuels

Adiabatic oxygen bomb calorimeter for determining heat of combustion of any solid or liquid fuel is described in 6-page bulletin. Manufacturer says calorific tests can be made rapidly and accurately in this instrument without complex radiation calculations. Single and double valve self-sealing oxygen bombs can be furnished.

Specification Sheet 1200 is issued by Parr Instrument Co., Inc., Dept. CP, 211 Fifty-third St., Moline, Ill. When inquiring specify CP 7081 on handy form, pages 2 and 3.

Do you have a Laboratory Heating Problem?

In pilot plants where many new chemical processes are being tested, the safe, controlled heating of valuable chemicals is a basic prerequisite to efficient pilot plant operation. Glas-Col Electric Heating Mantles are a vital tool in helping to achieve this goal.

The Glas-Col heating mantle for the large reactor, shown at the left, is just one of the broad line of mantles that Glas-Col has available for safe, controlled heating of inflammable liquids in pilot plants. The mantle for this reactor provides smooth, even heat through stepwise control of heat input . . . superheating of vapors is prevented . . . no hot spots to char valuable chemicals.

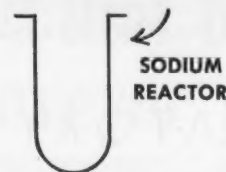
Glas-Col mantles are ideal where safe, controlled heating is needed. There are no flames or dangerously exposed wires since the elements of Glas-Col mantles are imbedded in glass or quartz. This reduces fire hazard. With Glas-Col electric heating mantles, you avoid the dangers inherent in using open flame, oil baths, or glowing wires. For your pilot plant heating problems, consult Glas-Col engineers, today.

Glas-Col Apparatus Co., Inc.
Dept. CP, 711 Hulman St.
Terre Haute, Indiana

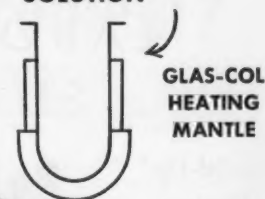


U. S. Patent
No. 2,231,506
U. S. Patent
No. 2,282,078

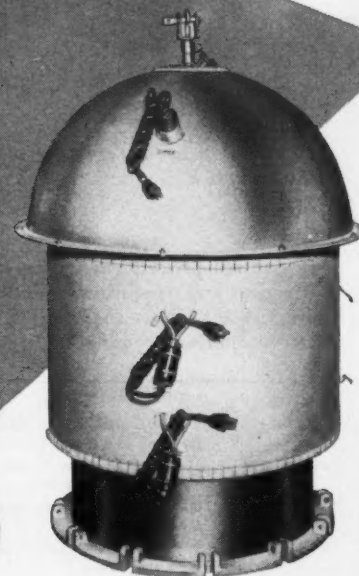
HEATING PROBLEM



SOLUTION



Sodium Reactor



Mantle Installed on Sodium Reactor

TYPICAL GLAS-COL ELECTRIC HEATING MANTLES



Mantle for
Resin
Distillation
Flask



Series M
Heating
Mantle



Mantle for
Resin
Reaction
Flask

FOR THESE APPLICATIONS

- Fractionations • Digestions • Distillations
- Liquid-phase cracking • Vapor-phase cracking
- Rapid distillation of water • Size from 100 ml to 72,000 ml
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ELECTRIC HEATING MANTLES

SPECIALISTS IN LABORATORY AND PILOT PLANT HEATING PROBLEMS

When inquiring check CP 7082 on handy form, pgs. 2-3

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**Build-Up®
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**Wrist-Action®
Motion**

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You control procedures from gentle to violent shaking and repeat any operation, exactly, at another time. Side clamps take various shapes and sizes. Top clamps take bottles and erlenmeyer flasks. Loads need not be balanced.

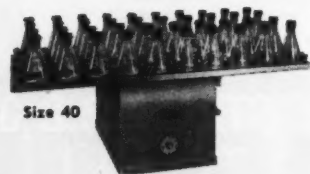
CAT. NO.	ITEM	PRICE
75-765	Build-Up Wrist-Action Shaker, Size BT for 8 top and 8 side flasks	200.00
75-750	Burrell Heavy-Duty Shaker, Size 40 for 40 flasks—flat-top only	345.00
75-763	Build-Up Wrist-Action Shaker, Size T for 8 top flasks	175.00
75-775	Build-Up Wrist-Action Shaker, Size BB for 8 side flasks	175.00

For 115 volts, 60 cycle, one phase. Other voltages to order.
For additional data, ask for Bulletin No. 307



ONE BASIC UNIT SERVES MANY DIFFERENT REQUIREMENTS

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HEAVY-DUTY MODELS

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Prices listed are F.O.B. Pittsburgh, Pa.

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Manufacturers and Distributors of
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2223 Fifth Avenue, Pittsburgh 19, Pennsylvania

When inquiring check CP 7083 on handy form, pgs. 2-3

FOR THE LABORATORY

**Measure specific gravity
in non-breakable
cylinder . . .**

allows reading with full jar,
catches overflow

Uses: For use with hydrometer in specific gravity measurements.

Features: Cylinder is non-breakable, corrosion-resistant, has built-in cup at top to catch overflow of valuable or dangerous liquids. Cup permits reading when cylinder is full.

Description: Polyethylene cylinder is 4 1/2" at base, 15" high. Cup has molded pouring spout to permit safe transfer of liquids from vessel. Accommodates most hydrometers.

(Hydrometer cylinder is product of American Agile Corp., Dept. CP, P.O. Box 168, Bedford, Ohio . . . check CP 7084 on handy form, pages 2 & 3.)

**Gas analysis output is
doubled by speeding
absorption . . .**

automatic pipet frees analyst
from time-consuming job

Uses: For use in conjunction with gas analyzer in general laboratory applications.

Features: Pipet is mounted on gas train, automatically completes job of selective absorption. Any number of pipets may be used in absorption train.

Description: Solenoid-driven pump injects absorbent chemical into pipet's gas-filled chamber 24 times a minute (rate for optimum absorption.) Transfer of components continues into any number of pipets by operating switch until breakdown is complete.

Pipets may be plugged into control in groups of three, allowing any number to be used in operation.

Automatic pipet relieves analyst from time-consuming job, permits performance of other operations while pipet runs itself.

(Fisher-Reeder Pipet is a product of Fisher Scientific Co., Dept. CP, 717 Forbes St., Pittsburgh 19, Pa. . . or check CP 7085, pages 2 and 3.)

Take surface temperatures

quickly, accurately . . .

with the



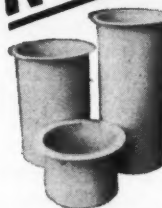
The handy Alnor Pyrocon is unequalled for quick, accurate reading of all surface temperatures . . . whether surfaces are metallic or non-metallic, flat or curved. Accurate temperatures are easily understood on the Pyrocon's direct reading scale face . . . without interpolation or need of conversion tables. A wide selection of thermocouples and extension arms permits adaptation to many types of service. For complete details and prices, send for Bulletin No. 4257. Illinois Testing Laboratories Inc., Room 504, 420 N. LaSalle Street, Chicago 10, Ill.

Alnor

PRECISION INSTRUMENT
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When inquiring check CP 7086 on handy form, pgs. 2-3

NOW! IOLYTE LAMINATED FIBERGLAS* CROCKS



- PRACTICALLY UNBREAKABLE
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- LIGHTWEIGHT
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10	16"	12"	28.00	50	18"	48"	69.00
12	16"	14"	30.00	27	22"	18"	49.00
15	16"	18"	35.00	30	22"	20"	53.00
20	16"	24"	40.00	55	22"	36"	70.00
30	16"	36"	49.00	73	22"	48"	83.00
40	16"	48"	59.00	55	28"	22"	76.00
14	18"	12"	35.00	95	28"	36"	98.00
20	18"	18"	40.00	125	28"	48"	125.00
26	18"	24"	45.00				

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SCHORI PROCESS DIVISION

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FACTORY: 59-31 54TH STREET, MASPETH, L. I.

When inquiring check CP 7087 on handy form, pgs. 2-3

CHEMICAL PROCESSING

FOR THE LABORATORY

Much simpler and quicker analysis of combustion gases from boilers possible with improved method . . .

permits rapid analysis for sulfur content of gases using simple equipment, one standard solution

A serious corrosive effect on certain portions of a steam generating boiler can result from the increasing amount of sulfur in fuels being used today. In order to provide the boiler designer with information that can serve as a guide in determining the minimum allowable airheater temperature for a given fuel and method of firing, it was desirable to have a method which would eliminate the shortcomings of other standard procedures. Unstable standard solutions, relatively complex equipment, and lengthy procedures all served to lessen the availability of necessary data within a convenient amount of time.

Employing one standard solution of sulfuric acid which can be kept indefinitely without appreciable change in strength, the improved method eliminates unstable standard solutions, which had been used previously. In addition, the method requires only a small table, standard laboratory glassware, and a source of distilled water. Therefore, due to the fact that laboratory facilities are not required, the procedure is suitable for a field testing program. Furthermore, time required for completion of analyses has been reduced from one day to one hour, making possible the collection of samples during one test and allowing the results of one test to be obtained before a subsequent test on the same day.

Utilizing a sampling tube with controlled temperature and suitable filtering medium to minimize oxidation of SO_2 to SO_3 , method allows the determination of both SO_2 and total sulfur by a turbidimetric procedure.

Isopropyl alcohol is used to absorb the SO_3 , and 3% hydrogen peroxide is employed for the absorption of SO_2 . A standard solution of N/10 sulfuric acid is used to prepare suitable calibration curves. The SO_2 concentration (major portion of the flue gases) is obtained by difference after determining the SO_3 and total sulfur directly as outlined above.

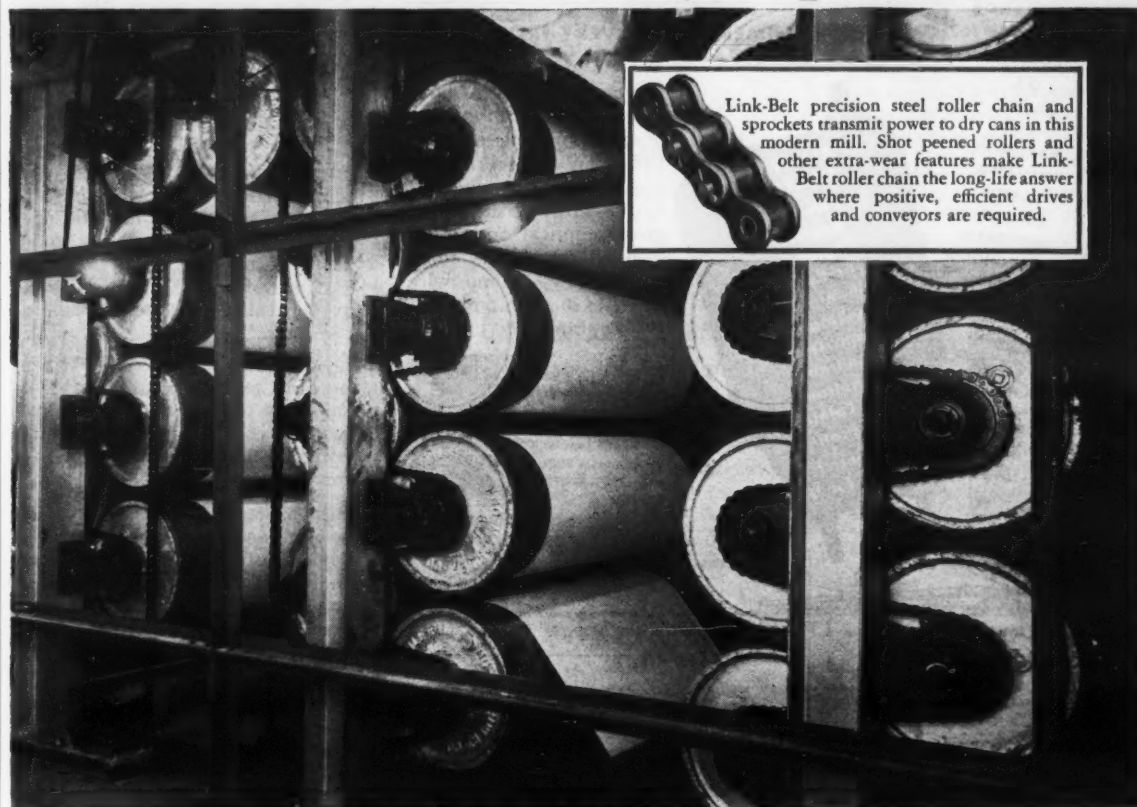
(Details of procedure and equipment are contained in a paper entitled "An Improved Method and Apparatus for the Determination of SO_2 and SO_3 in Boiler Flue Gas at any Operating Temperature," presented by members of the Research Center of The Babcock & Wilcox Co. at Alliance, Ohio during a recent meeting of the ACS.)

Electrostatic and peak voltmeters described in bulletin

High sensitivity electrostatic voltmeters and peak voltmeter units for measuring, with high accuracy, both AC and DC voltages, are described and listed in illustrated bulletin.

"Electrical Measurements," Vol 20, No. 9, is available from Sensitive Research Instrument Corp., Dept. CP, 9-11 Elm Ave., Mount Vernon, N. Y. Specify CP 7088, pages 2 and 3.

Is there one chain that best meets your drive or conveyor problem?



Link-Belt precision steel roller chain and sprockets transmit power to dry cans in this modern mill. Shot peened rollers and other extra-wear features make Link-Belt roller chain the long-life answer where positive, efficient drives and conveyors are required.

You'll find the answer in LINK-BELT's complete chain line... a size and type for every job

The application shown above is an example of how you can select the *one* chain best suited for a particular need from the complete Link-Belt line. And each chain is engineered to provide more efficient service at lower cost than so-called general purpose chain.

Whatever your requirements, you are assured of the *right* chain for the job when you rely on Link-Belt. And, remember—a chain bearing the Link-Belt double arrow is your guarantee of longer chain life.

For information on the complete Link-Belt chain line, see the Link-Belt representative near you. He has the answers for efficient, low-cost drive and conveying chain performance.

LINK-BELT
CHAINS AND SPROCKETS

Typical chains from the complete LINK-BELT line



Ewart Detachable Link-Belt—A widely used, popular chain for average or normal-duty service on conveyors, elevators and drives.



Class 400 Pintle Chain—Closed end design keeps out dirt, makes excellent service medium for drives, elevators, conveyors.



Double-Pitch Precision Steel Roller Chain, for conveyor and power transmission applications.



Silent chain, for smooth, high-speed drive service, from fractional to 2500 horsepower.

LINK-BELT COMPANY: Plants: Chicago, Indianapolis, Philadelphia, Colmar, Pa., Atlanta, Houston, Minneapolis, San Francisco, Los Angeles, Seattle, Toronto, Springs (South Africa), Sydney (Australia). Sales Offices, Factory Branch Stores and Distributors in Principal Cities. 19, 191-C

When inquiring check CP 7089 on handy form, pgs. 2-3

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Electronics from
One Dependable Source

When inquiring check CP 7090 on handy form, pgs. 2-3

**Evaporate...
Bake... Dry...**

at 200° to 1000° F.
under
Controlled Conditions

- Electric Heating
- Heated Air Filtered and Recirculated
- Closely Controlled Processing Temperature and Product Uniformity
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Made in wide range of batch type ovens for tray or shelf loading. Available also in steam, gas or oil—direct or indirect heating. Write for Catalog.

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Sales Representatives in Principal Cities

When inquiring check CP 7091 on handy form, pgs. 2-3

FOR THE LABORATORY

Compact mixer helps solve laboratory space problem...

low height, sturdy base give versatility in little space

Uses: For general mixing applications where space must be considered.

Features: Unit is less than 2 3/4" high, only 4 1/2" wide, has sturdy base plate for variety of positions and tilts. Magnetic operation of mixer eliminates contaminant-collecting shaft and impellers of mechanical stirrers, permits full access to top of sample container.

Description: Distance from center of plate to assembly rod (4 1/2") conforms to lab standards. Any sample container—glass, plastic, porcelain or non-magnetic metal—may be used.

Alnico magnetic bar is placed in sample container, revolves at same speed as stirring motor. Contents in flask (either open or closed) are mixed at rheostat-controlled speeds from a stationary low to a high of 1650 rpm with full load, 2700 rpm when empty.

Unit includes stirring motor in aluminum housing, cast-iron support plate, and two Alnico bars—one sealed in glass, one in polyethylene. Unit uses 115v, 50/60 cy AC.

(Flexa-Mixer is a product of Fisher Scientific Co., Dept. CP, 717 Forbes St., Pittsburgh 19, Pa. . . or for more information check CP 7092 on handy form located between pages 2 and 3.)

Describes petroleum testing apparatus

Large assortment of petroleum products testing apparatus are described in 4-page catalog. Description, availability and function of each item as well as ASTM number of the test using apparatus are given. Each item is arranged in order of its increasing ASTM number.

Bul 53-A is available from Technical Equipment Co., 743 Dwight Way, Berkeley 10, Cal. When inquiring specify CP 7093 on convenient Reader Service slip, pages 2 and 3.

temperature conversion tables

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C to F
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PANDUX
SURFACE TEMPERATURE THERMOMETER

...stops guesswork on surface temps. The PANDUX gives linear thermal readings to $\pm 2^\circ$ full-scale accuracy. Unit sealed against corrosive atmospheres. Mirror dial protects element against external radiation. Easy to affix to surfaces with magnet or silicone grease, 2" in diameter; weighs 1 oz. Fully guaranteed. Specify model wanted.

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☐ And hundreds of other vital uses

\$6.75

Complete with magnet clamp and 1/2 oz. of silicone grease.

Model 309F: -50°F to 250°F
Model 309C: -50°C to 110°C
Model 310F: 0°F to 300°F
Model 310C: -10°C to 150°C
Model 311F: 70°F to 370°F
Model 311C: 20°C to 180°C

ONLY

Write for FREE Temperature Conversion Chart No. CP-354

PACIFIC TRANSDUCER CORP.

11921 W. Pico Blvd.—Los Angeles 64, California

When inquiring check CP 7094 on handy form, pgs. 2-3

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When inquiring check CP 7095 on handy form, pgs. 2-3

CHEMICAL PROCESSING

FOR THE LABORATORY

Freeze-dryers are self-contained, eliminate dry ice chamber

Two compact freeze-dryers are designed to process small to medium quantities of bacteria, plasma, antibodies, serums, viruses, hormones, other labile pharmaceuticals and biologicals.

Units are self-contained, eliminating need for conventional dry ice chamber.

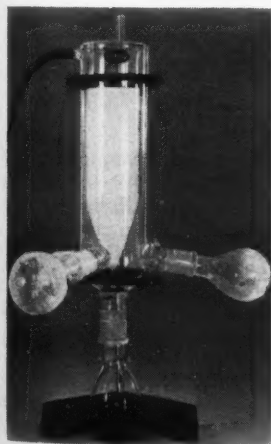
Stainless steel unit has a cooling chamber of 2.8 liters, holds enough dry ice and solvent for overnight



Stainless steel unit has 2.8 liter cooling chamber

unattended operation. It is made of 18-8 stainless, hence can be autoclaved after use with infectious materials.

Unit incorporates 14 taps which are swaged in and soft-soldered to insure leak-proof joints. Two taps are for vacuum pump. Other 12, baffled to prevent clogging, are for drying flasks. Each tap is capable of removing a minimum of 100 ml of water.



Unit is 21" high

Easy-to-use all-glass unit is only 21" high, has built-in dry ice and solvent chamber, three standard drying ports around its lower periphery and one port for dry or drip trap at base. Standard size for these joints is 3/4" but special sizes can be ground to specification.

(Freeze-drying units are products of E. Machlett & Son, 220 East 23rd Street, New York 10, New York . . . or for more information about these items reader may simply check CP 7095A on convenient Reader Service slip located between pages 2 and 3.)

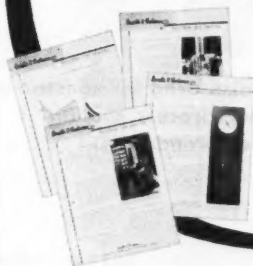
These new Arnold O. Beckman bulletins describe...



BULLETIN 103: Describes the Model G-2 Beckman Oxygen Analyzer—the instrument to use where maximum accuracy is essential. Model G-2 ranges are available for oxygen concentrations as low as 0-1000 parts per million—as high as 95-100%—or virtually any other range or combination of ranges. Bulletin 103 describes the unique magnetic operating principle used in Model G-2 Analyzers, equipment, accessories and typical applications.



BULLETIN 108: Describes the Model F-3 Beckman Oxygen Analyzer—the instrument designed primarily for industrial applications such as combustion control, catalyst regeneration, sulfur grinding, etc., which require an oxygen measuring range of 0-5%, 0-10%, 0-15% or higher. Bulletin 108 describes the unique magnetic operating principle used in Model F-3 Analyzers, gives equipment specifications and typical applications for this instrument.



The above informative literature will gladly be sent you free. For maximum convenience, use the coupon at right.

BULLETIN AD607: Contains helpful charts and data on most efficient methods of controlling various combustion processes.
BULLETIN AD610: Contains helpful data on Chemical Applications, illustrates a typical installation, lists equipment required.
BULLETIN AD611: Contains helpful data on Tunnel Kilm Applications, shows typical installation, details equipment required.
BULLETIN AD613: Contains helpful data on measuring O₂ content of High Purity Gases, shows typical sampling system, lists equipment required.

Arnold O. Beckman INC.

1020 Mission St., South Pasadena 14, California

Please send Bulletins checked below:

☐ 103 ☐ 108 ☐ 607 ☐ 610 ☐ 611 ☐ 613

Name

Company and Address

Position

WHERE OXYGEN CONTROL

is vital in a wide range of manufacturing and processing operations—chemicals, metals, soaps, oils, drugs, plastics, ceramics, petroleum products and many others.

WHY OXYGEN MEASUREMENT

is the key to more efficient operation, higher quality, better uniformity, less waste and greater overall profits.

HOW OXYGEN ANALYZERS

by Arnold O. Beckman, Inc. permit greater accuracy, adaptability, and efficiency than other types because these instruments continuously measure process streams by a unique magnetic principle that provides direct physical measurement of oxygen itself—not of some secondary relationship.

SEND TODAY FOR THIS HELPFUL DATA...

CHECK THESE IMPORTANT ADVANTAGES OF ARNOLD O. BECKMAN OXYGEN ANALYZERS

DIRECT MEASUREMENT: Operating principle is based on unique paramagnetic properties of Oxygen. Arnold O. Beckman Oxygen Analyzers measure oxygen by direct physical means. No chemicals are required, no saturated atmospheres, no "hot wires" or other complex devices that may alter the composition of the sample gas.

HIGH ACCURACY: Readings are accurate within $\pm 1\%$ of full scale for spans of 2% O₂ and greater (e.g. .02% O₂ on 0-2% O₂ range). Accuracy is unaffected by ambient temperature variations.

LINEAR SCALE: Calibration of Arnold O. Beckman Oxygen Analyzers is strictly linear and the scale is accurate over the entire range.

SIMPLE SAMPLING: Only a small volume is necessary—50-250 cc. per minute. Accuracy is not affected by variations in flow rate. Samples may be dry or saturated. Nothing is added to the sample, and it may be returned to the process unchanged. Many corrosive or reactive gases can be analyzed.

COMPLETELY AUTOMATIC: Sampling and measurement are continuous and automatic. No attendant is necessary.

RUGGED CONSTRUCTION: The unit is shock mounted to protect it from extreme vibration and shock. Maintenance is negligible—no chemicals, filaments, wicks, etc., to replenish—no orifices or glassware to clean and replace.

MANY RANGES: From a few parts per million to 100% O₂. Multi-range instruments are also available.

Your inquiries on oxygen measuring and control problems are welcomed. Please write directly to our head office giving data on the requirements of your particular application.

When inquiring check CP 7096 on handy form, pgs. 2-3

If Synthetic Rubber
will handle it...



will pump it!

Lowest Cost Pumping Unit in its Field

Precision Molded Synthetic Rubber Casing:

Ruggedly built, age-cured, fully stress relieved. Ideal for conveyance of chlorine bearing fluids such as water, hydrochloric and other acids—plus many alkalis, and organic and inorganic fluids compatible with synthetic rubber.

Time Tried, Nationally Known Eco Pump Design:

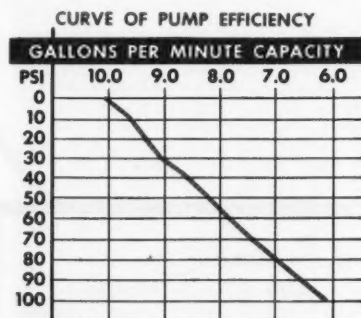
Capacities up to 10 GPM and pressures to 100 PSI in sustained service at 1725 R.P.M. Unexcelled suction lift, safety self-priming design and linear flow.

Internal Parts:

Shafts, etc., Type 316 stainless steel or Monel. Impellers of

duPont Neoprene, Hypalon or Teflon. All parts interchangeable, size for size, with Eco All-Chem stainless steel pumps and standard bronze process pumps.

ECO ENGINEERING COMPANY
12 New York Ave., Newark 1, N. J.



ECO

When inquiring check CP 7097 on handy form, pages 2-3

corrosion control

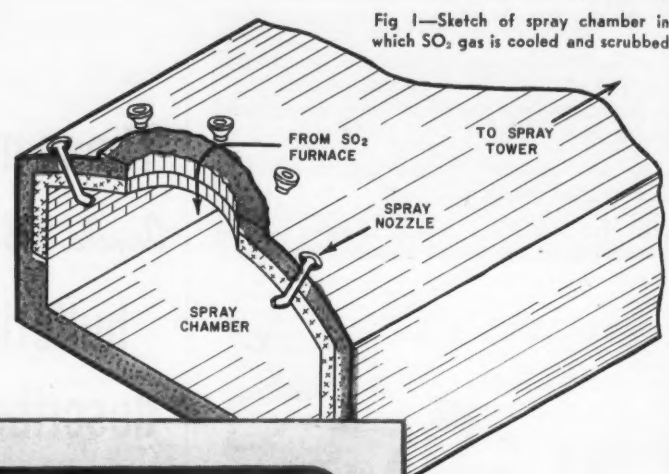


Fig 1—Sketch of spray chamber in which SO_2 gas is cooled and scrubbed



Fig 2—Generally regarded as too complex to reproduce in a refractory, nozzles were fabricated from silicon carbide by design modifications and a special method of manufacture

Spray nozzles corroded in two months
handling hot, wet SO_2 gas, but—

*they last five years when made
from silicon carbide refractories*

Material also used for construction
of recovery process cooling
chamber at Standard Oil

Problem: At the Bayway refinery of the Standard Oil Company of New Jersey, spray nozzles and cooling chamber used in SO_2 recovery process were subject to severe corrosion. Although a variety of metals had been tried for nozzles, they had a short life, in most cases less than two months. Acid-proof brick used for arch and sidewalls of cooling chamber gave only two months service, spalling being the primary reason for failure.

Gas enters cooling chamber or "doghouse" at 1700-1800°F. Cooling and preliminary

scrubbing is performed by spraying a 15% solution of SO_2 in water, at 150°F, through eight nozzles located in roof of chamber. Corrosion caused repeated interruptions to process to permit repairs to chamber or for replacement of nozzles.

Solution: Carbofrax silicon carbide refractories were used for the construction of the cooling chamber arch. Material selected has following properties:

- 1 Inertness to most acids, even at elevated temperatures.
- 2 High thermal conductivity — 10 to 11 times that of fireclay, almost as high as chrome-nickel steels.
- 3 Exceptional hot strength — modulus of rupture at 2460°F ranges from 800 to 3125 psi for different material.
- 4 Low permeability.

- 5 Excellent resistance to spalling and cracking.
- 6 Low coefficient of thermal expansion — averages 2.6×10^{-6} per °F, from 70 to 2500° F.

Waffle or panel arch, with each shape tongued and grooved for structural stability, was installed in cooling chamber. Results led to use of material in gas inlet area and in sidewall section above the bath.

Experience with silicon carbide refractories for the cooling chamber suggested possibility of using this material for the nozzles. Usually such an intricate design as is required for a nozzle could not be reproduced in a refractory. However, through certain modifications, coupled with a special method of manufacture, production of nozzle illustrated became possible. Particular material used for the nozzles has following characteristics:

- 1 High resistance to heat shock.
- 2 Excellent corrosion and erosion resistance.
- 3 Mechanical strength, which is retained at elevated temperatures.
- 4 Hard, dense body of low permeability.

Results: Silicon carbide refractory used for the arch and upper sidewalls of chamber has given more than two years service, as compared with the two months obtained with previous materials used. Nozzles fabricated from silicon carbide refractory still show no signs of wear after five years service.

Of the original lot supplied, only those that were broken during arch changeovers have been replaced. While no measure has been made in terms of dollar and cents savings, great reduction in downtime and attendant lower maintenance costs over past five years, not to mention the advantages of uninterrupted production, are significant.

(Article was prepared from material submitted by Frank C. Roe, The Carborundum Company, Dept. CP, Niagara Falls, N. Y. . . . or for more information check CP 7098 on handy form, pages 2 and 3.)

Copper plating of gears prevents corrosion and eliminates greasing . . .

provides quick and smooth run-in of gears

Copper plating of all of manufacturer's gears will prevent corrosion that may occur before they are placed in service. It also eliminates need for greasing, the common method employed for preventing corrosion. Another advantage is the quick and smooth run-in of copper plated gears due to the gentle lapping action of the thin copper film. Gears over 30" diameter are protected with copper colored water-soluble paint which need not be removed before placing in service. Internal parts of assemblies and transmissions, of course, are not plated or painted.

(Certified copper plated gears are product of Brad Foote Gear Works, Inc., Dept. CP, 1309 S. Cicero St., Cicero 50, Ill. . . . or for more information check CP 7099 on handy form, pages 2 and 3.)

THE LABORATORY

USES PORCELAIN



SO CAN YOU!



In putting new processes into production, there's no need to compromise with purity because industrial-scale equipment won't duplicate laboratory results . . . Nor to search for substitute materials that will produce equivalent results. Why not use the same materials in which the laboratory worked out the process?

Chemical Porcelain, world-wide standard for laboratory purity, is available from Lapp in equipment for pilot-plant and industrial production. In a wide variety of valve styles, in pipe and fittings, in towers and raschig rings, and many special shapes. It costs much less initially than special alloy or lined equipment, and, even in cases of most severe acid corrosion, usually requires no maintenance.

If you're unusually concerned about protection of product, plant, or personnel against accident or carelessness, specify Lapp Chemical Porcelain with TUFCLAD armor (multiple layers of heavy fiberglass fabric bonded with an Epoxide resin). TUFCLAD serves as protection against impact, insulation against thermal shock—and is of itself strong enough to hold operating pressures even if porcelain is cracked or broken.

For severe corrosion service, or where no metallic contamination can be tolerated, join the hundreds who have found Lapp Chemical Porcelain the only satisfactory—and most economical—processing material.

ANGLE AND Y-VALVES 1/2" TO 6"
PLUG COCKS 1", 1 1/2", 2"
FLUSH VALVES FOR 3", 4", 5"
TANK OUTLETS
PIPE AND FITTINGS 1/2" TO 8"
TOWERS 12", 18", 24"
RASCHIG RINGS 3/4" TO 3"
TOWER PLATES



Lapp

CHEMICAL PORCELAIN



WRITE for description and specifications. Lapp Insulator Co., Inc., Process Equipment Division, 315 Wendell St., Le Roy, N. Y.

When inquiring check CP 7100 on handy form, pgs. 2-3

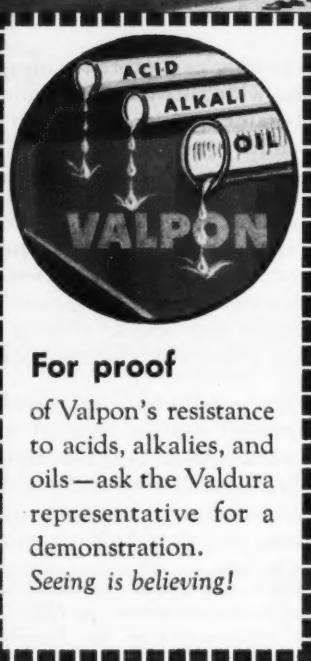
VALDURA VALPON

Protects this food processing plant!



Competitive tests determined the specifications for protective finishes in this famous food plant. And Valdura's Valpon was the winner! Valpon, incorporating the wonderful new Epon Resins produced by Shell Chemical, provided the most protection against

- ★ **OILS...** animal, vegetable or mineral
- ★ **ACIDS**
- ★ **ALKALIES**



For proof

of Valpon's resistance to acids, alkalies, and oils—ask the Valdura representative for a demonstration. *Seeing is believing!*

If you'd like to know more about Valpon and other items in Valdura's complete line of specialized maintenance products, or if you'd like help with a particular problem, just state your wishes on your regular letterhead and mail to the address below. Your inquiry will be treated as an invitation to provide service... not as a license to exert selling pressure!



VALDURA HEAVY DUTY PAINT DIVISION
AMERICAN-MARIETTA CO.
101 E. Ontario St., Chicago 11, Ill.

When inquiring check CP 7101 on handy form, pgs. 2-3

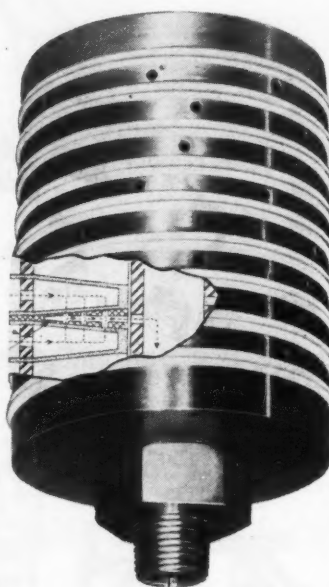
CORROSION

Fuming nitric acid withstood by filter . . .

removes particles larger than five microns from liquids

Uses: For filtration of highly corrosive materials.

Features: Unit is said to resist fuming nitric acid, as well as such materials as hydrochloric acid and hydrogen peroxide. It will remove all particles larger than five microns in liquid filtration and much finer particles in gas filtration. It can be used at temperatures up to 350°F and is resistant to thermal shock.



Compact in-line filter can be used at temperatures up to 350°F

Description: Compact in-line filter utilizes porous Kel-F for the filter medium. This material has a tensile strength of 900 psi and a modulus of elasticity of 18,000 psi.

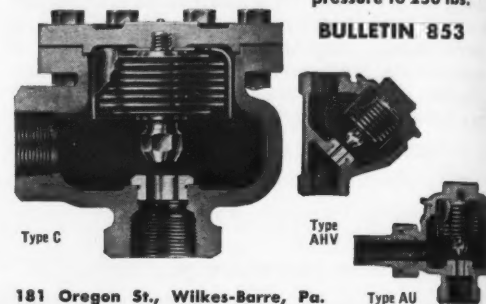
Filter has stainless steel separator rings and is housed in a stainless steel container. One square foot of filtering area is provided in an envelope 5 3/8" in diameter and 6 1/2" long. It is designed for ready accessibility for cleaning and can be quickly disassembled and reassembled.

Pressure drops are low, a practical rating for fuming nitric acid being 1 gpm/sq ft. Unit is de-

Nicholson Steam Traps Test MAXIMUM CAPACITY PER \$ COST

One of the nation's largest plants recently conducted comparative tests of steam traps. They showed that Nicholson traps "provide lowest initial cost for handling large amounts of condensate." Other Nicholson features: operate on lowest temperature differential; only one moving part; freeze-proof. See why leading plants are increasingly standardizing on Nicholson's for faster heat transfer. 5 types: size 1/4" to 2"; pressure to 250 lbs.

BULLETIN 853



181 Oregon St., Wilkes-Barre, Pa.

W. H. NICHOLSON & CO.

TRAPS · VALVES · FLOATS

When inquiring check CP 7102 on handy form, pgs. 2-3

A REAGENT FEEDER THAT DEFIES CORROSION

★ **THE NEW CLARKSON
MODEL E IN RIGID PVC**

- ★ Accurate
- ★ Economical
- ★ Corrosion-Proof
- ★ Wide Feeding Range
- ★ Complete Dependability



PROVED PERFORMANCE PLUS PVC

The Clarkson Model E reagent feeder, with practically all of the mining industry market, has a long standing record of proved performance. Now fabricated entirely from rigid polyvinyl chloride, the new Model E feeder combines remarkable corrosion resistance with performance tested design, high accuracy and low cost. For all chemical industry applications, the outstanding value in reagent feeders is the Clarkson Model E in pvc.

Write today for Bulletin 541—it tells the full story.

THE CLARKSON COMPANY

564 MARKET STREET • SAN FRANCISCO 4, CALIF.

When inquiring check CP 7103 on handy form, pgs. 2-3

CHEMICAL PROCESSING

CORROSION

signed to withstand 75 psi differential across filter element and up to 1200 psi line pressures. Filters are available from fractional square foot filter area up to 50 sq ft, larger units being made to special order.

(Filter is product of Porous Plastic Filter Co., Dept. CP, Glen Cove, N. Y. . . . or for more information check CP 7104 on handy form, pages 2 and 3.)

Wide range of corrosives withstood by acid hose

Improved acid hose is said to be resistant to a wide range of acids, salts, alkalis, and other solutions. According to manufacturer, improvement has been made by compounding a synthetic with other acid-resisting materials for tube and cover. It can convey solutions previously not recommended for rubber hose. Tube of hose is also reported to have high abrasion resistance to slurries.

(Condor Acid Discharge and Condor Acid Suction Hose are product of Raybestos-Manhattan, Inc., Manhattan Rubber Div., Dept. CP, Passaic, N. J. . . . or for more information check CP 7105, pages 2 and 3.)

Rust-inhibiting coating for metal pictured

Bulletin describes method of preparing metal surfaces for painting which combines metal treatment with deposition of a chemically-bonded, rust-inhibitive organic film. Coating is applied by any of the usual paint applying methods.

"Vinsynite" is issued by Specialty Coatings, Inc., a Div. of Thompson & Co., Dept. CP, 1085 Edwards Blvd., Oakmont, Pa. When inquiring specify CP 7106 on handy form, pages 2 and 3.

For more information on product at right, specify CP 7107
see information request blank between pages 2 - 3.

GOT A TOUGH CORROSION PROBLEM?

..... Relax!



COOPER ALLOY

THE COOPER ALLOY FOUNDRY CO. • HILLSIDE, N. J.

Los Angeles San Francisco Oakland Houston Chicago Detroit Philadelphia Hartford
Leading producers of STAINLESS STEEL valves, fittings and castings

Light up your pipe and lean way back in your favorite chair. If you're troubled with a tough corrosion problem—why not let our metallurgical staff do the worrying for you.

Whether you're in need of intricate stainless castings or top quality stainless steel valves, fittings or accessories, just turn the specifications over to Cooper Alloy. Our products are produced with care—use them with confidence and relax.





PHOSPHATE COATINGS TO MAKE YOUR PRODUCT DURABLE*

PIONEERING RESEARCH AND DEVELOPMENT SINCE 1914

For more than a third of a century, ACP research chemists and ACP technical representatives in the field have pioneered in the science of metal preservation. They have developed surface treating chemicals which either protect metals directly, or create a superior bond for decorative and protective paint finishes, and now, ACP chemicals and processes are being used the world around to reduce costs, speed production and add to the life-span of countless products.

ACP metal protective chemicals include: protective coating chemicals for steel, zinc and aluminum; metal cleaners and rust removers; final rinse controls; pickling acid inhibitors; copper coating chemicals; soldering fluxes; alkali cleaners and addition agents; copper stripping and brightening solutions.

AMERICAN CHEMICAL PAINT COMPANY

General Offices: Ambler, Penna.

Detroit, Michigan

Niles, California

Windsor, Ontario

PAINT BONDING

"GRANODINE"® zinc phosphate coatings improve paint adhesion on automobiles, refrigerators, projectiles, rockets, and many other steel and iron fabricated units or components.

"LITHOFORM"® zinc phosphate coatings, make paint stick to galvanized iron and other zinc and cadmium surfaces.

"ALODINE"® protective coatings provide improved paint adhesion and high corrosion-resistance for aircraft and aircraft parts, awnings, wall tile, signs, bazookas, and many other products made of aluminum.

RUST PROOFING

"PERMADINE"® zinc phosphate coatings provide rust and corrosion proofing for nuts, bolts, screws, hardware, tools, guns, cartridge clips, and many other industrial and ordnance items.

PROTECTION FOR FRICTION SURFACES

"THERMOIL GRANODINE"® manganese-iron phosphate coatings provide both rust proofing and wear resistance — anti-galling, safe break-in, friction on rubbing parts.

IMPROVED DRAWING AND COLD FORMING

"GRANODRAW"® zinc phosphate coatings make possible improved drawing, cold forming and extrusion on such steel products as sheets for stamping, bumpers, parts to be formed, prior to plating or painting, cartridge cases, etc.

*Made, Sold, and Serviced By A Pioneer
In Protective Coatings For Metals . . .

CORROSION

Resistance of aluminum to hydrogen sulfide increases use . . .

tank decks, bubble caps, and piping are typical applications

Aluminum has been shown so satisfactory in resisting hydrogen sulfide attack that it is widely used for tank decks in sour crude areas as well as for other applications. Aluminum tank decks installed in 1928 show no signs of corrosion today. Service life of 10 to 15 years is also reported for aluminum bubble caps in debutanizer columns handling gasoline distillate from West Texas sour crudes at temperatures ranging from 200 to 425°F.

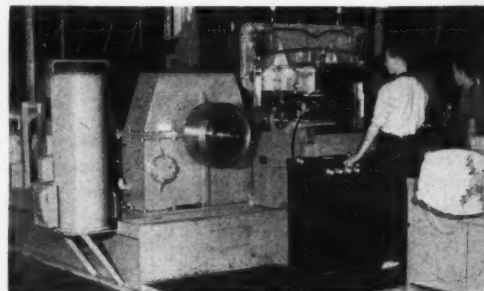
Aluminum forms and piping are also used for handling molten sulfur and sulfuric acid. Building materials and structural parts made of the metal are finding increasing favor in regions where atmosphere is contaminated with hydrogen sulfide or other sulfur bearing compounds.

(Courtesy of Reynolds Metals Co., Dept. CP, 2500 S. 3rd St., Louisville, Ky. . . . or for more information check CP 7109 on handy form, pages 2 and 3.)

Thickness down to .0005" in cold-rolled cobalt base alloy sheet . . .

combines corrosion-resistance with high strength and hardness up to 1500-2000°F

Uses: Varied applications include stem pads on valves handling superheated steam, thin spring blades for high temperature switching devices, diaphragms, rupture discs, and industrial knives.



Hardnesses as high as Rockwell C-55 are being produced in cold-rolled cobalt base alloy sheet

Features: Cobalt base alloy No. 25, now available in thicknesses down to .0005", has high strength and hardness, combined with excellent corrosion resistance at temperatures up to 1500-2000°F. Cold working of alloy results in wide range of hardness values. Hardnesses as high as Rockwell C-55 are being produced with an accompanying ultimate strength of about 322,000 psi and an elongation of about 2%. This results from 50% cold reduction, followed by an aging heat treatment.

When inquiring check CP 7108 on handy form, pgs. 2-3

Description: At 20% reduction and no subsequent aging, this cobalt base material, known as Haynes Alloy No. 25 (L605) sheet has an ultimate strength of 192,000 psi. Under same conditions, yield strength is 163,000 psi, elongation 27%, and Rockwell hardness 44. Haynes Stellite Multimet (N155), Hastelloy B, and Hastelloy C Alloys are also available in cold-worked condition in thicknesses from .125 to .0005".

(Alloy sheets are available from Metals & Controls Corp., General Plate Div., Dept. CP, Attleboro, Mass. . . or for more information check CP 7110 on handy form, pages 2 and 3.)

Life of galvanized surfaces extended by zinc dust primer . . .

rust-forming acids feed on primer instead of the galvanized metal it covers

Uses: For preventing or inhibiting rust formation on galvanized surfaces.

Features: Primer may be top-coated with house-paint but is durable enough by itself to achieve prolonged freedom from rusting.

Description: Zinc dust galvanized metal primer makes use of the fact that zinc adheres firmly to zinc. In addition to this mechanical protection, zinc primer acts in a manner different from paint. It is "self sacrificing," that is, rust is prevented or inhibited because rust-forming acids feed on the zinc in the primer rather than on galvanized metal surface it protects.

(Zinc dust primer is manufactured by E. I. du Pont de Nemours & Company, Finishes Division, Department CP, Wilmington 98, Delaware . . . or for more information reader may simply check CP 7111 on handy Reader Service slip located between pages two and three.)

Cast high alloys in process equipment outlined

Technical article of eight pages discusses in detail cast corrosion-resistant alloys most generally used for process equipment in chemical industries. Tables indicating physical and mechanical properties of cast corrosion-resistant alloys, standard designations, and chemical composition ranges for heat and corrosion-resistant castings are included. Article gives individual alloy characteristics and points out differences between cast and wrought alloys. It also provides recommendations for specific heat and corrosion problems.

"Cast High Alloys" is available from Cooper Alloy Foundry Co., Dept. CP, 100 Bloy St., Hillside, N. J. When inquiring specify CP 7112 on handy Reader Service slip located between pages 2 and 3.

Tough GASKETS

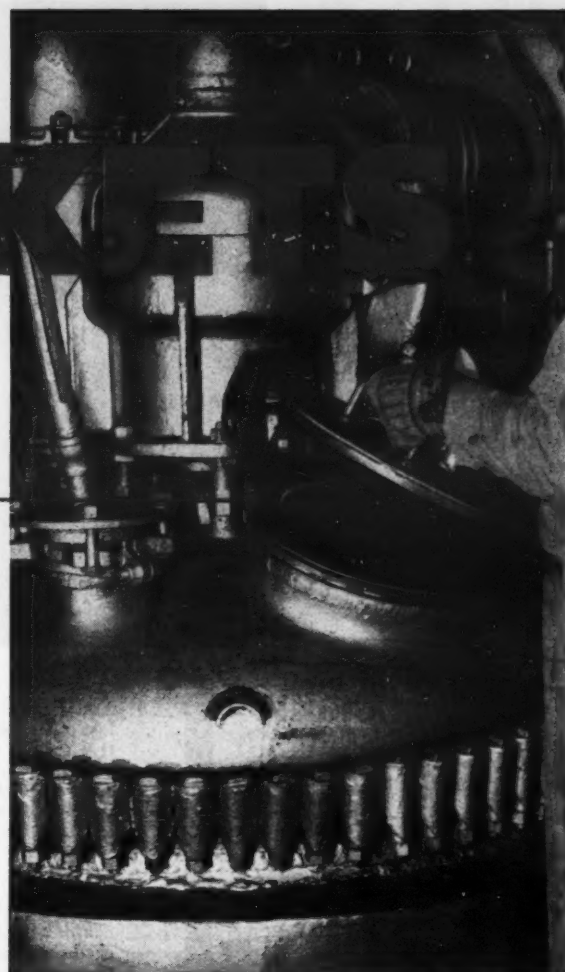
FOR TOUGH JOBS ARE MADE WITH TYGON

One sure answer to tough gasketing problems is the versatile corrosion-resistant TYGON family of plastic compounds. For, TYGON not only resists acids, alkalies, oils, greases, some solvents, and water — but, is strong, resilient, abrasion-resistant and light in weight. TYGON is also impermeable, non-contaminating and non-oxidizing. TYGON can be used for virtually any gasketing job in chemical processing and general industrial equipment — wherever positive, enduring seals or separators are required. For food and beverage uses, special non-toxic compounds are also available.

For service as gasketing, TYGON is made in a number of standard compounds, translucent or glossy black, which offer a range of physical, electrical, and chemical properties for almost any application.

TYGON gaskets can be die-cut from calendared or press-polished sheets ($\frac{1}{8}$ " to $\frac{1}{2}$ " thick); can be molded in practically any size or shape; or, can be extruded as tubing, solid cord, or channel in continuous lengths.

Write today, for further information and technical assistance on the use of TYGON as gasketing. Ask also about the other uses of this versatile plastic that can help you combat corrosion.



TYGON GASKET — in service against 85% acetic acid, at 160°-175°F lasts over a year compared to a few weeks' service from rubber. Photo courtesy Hoffman-LaRoche Inc.

TYGON TUBING



fully flexible, glass-clear, mirror-smooth for safe, speedy transmission of liquids, gases and semi-solids.

TYGON TANK LINING



long lasting, heavy duty sheet TYGON to withstand virtually all chemicals.

TYGON PAINT



quickly applied, fast drying protection against corrosive fumes and spillage.

U. S. STONEWARE
AKRON 9, OHIO

PLASTICS AND SYNTHETICS DIVISION

When inquiring check CP 7113 on handy form, pgs. 2-3

344-C



You benefit 6 ways when you specify Inco Castings

What do you want in a sand or centrifugal casting — long and useful service life — strength and corrosion resistance — special properties to resist galling or protect product purity — ability to withstand wear?

Then it will pay you to look into Inco castings.

Here are the specific advantages you get:

1. You get castings that generally outlast other materials under destructive service conditions. That's because they are made of Inco Nickel Alloys, which have been especially developed to withstand corrosion, abrasion, erosion and galling.
2. You get high quality castings because they are made to meet or exceed Government specifications for these high Nickel alloys.
3. You get castings in any practical design or size you need including centrifugal castings and standard pipe fittings. Inco has specialized in castings for over 47 years and is equipped to make your castings whether they weigh a few ounces or tons.
4. You get the benefit of Inco's help in solving your metal problems based on wide experience in field and laboratory testing of Nickel Alloys.
5. You get Inco Nickel Alloy castings made at Inco's own foundry; your assurance of sound, dependable castings.
6. Even castings you previously thought impractical to produce in Monel®, Nickel or Inconel® can often be cast by Inco's specialists.

Inco castings can be cast in any of eight different Inco Nickel Alloys developed to last under the most destructive conditions.

Inco casting specialists will be glad to study your casting problem and suggest a solution. If possible, send a blueprint and full details of operations, conditions and temperatures. And ask for a copy of "Engineering Properties of Cast 'S'® Monel."

THE INTERNATIONAL NICKEL COMPANY, INC.
67 Wall Street, New York 5, N. Y.



Inco Castings

SAND, CENTRIFUGAL, PRECISION

When inquiring check CP 7114 on handy form, pgs. 2-3

CORROSION

Chlorine pumped rapidly without contamination or corrosion . . .

units in service eliminate former waste of time and material

Uses: Unit is being used for dry chlorine handling. It is possible that the pump can be applied to other difficult services.

Features: Pump enables chlorine to be handled $3\frac{1}{2}$ to 4 times faster than former methods in which dry, compressed air was used. Contamination and corrosion which occurred previously due to moisture coming in contact with chlorine have been eliminated. Several units in service for a leading chlorine producer are said to be far more satisfactory than conventional systems.

Description: Enclosed rotor induction drive pump is designed so that its moving parts are immersed in the liquid handled. Liquid is sealed from air contact by use of a non-magnetic stainless steel diaphragm in air gap, between rotor and stator of a conventional motor. Unit can then be mounted, through manholes in storage tanks, for transferring chlorine to tanks, tank cars, or cylinders.

Density of chlorine decreases rapidly with temperature increases. Chlorine must have adequate space for expansion to avoid rupture of containers and pipe lines. Temperature must be kept as constant as possible throughout pumping system to overcome this difficulty. This is accomplished by recirculating 25% of normal capacity of pump back to supply tank during pump operation.

Liquid chlorine is lubricant for bearings. Vaporization must be avoided to keep moving parts in contact from overheating, which will cause undue wear. Discharge may be closed at times during operation, bypass taking enough flow to avoid dangerous temperature changes. When pumps are removed from tanks, they must be thoroughly dried before returning to chlorine contact to avoid corrosion.

(Pump is product of Peerless Pump Div., Food Machinery and Chemical Corp., Dept. CP, 301 W. Ave. 26, Los Angeles 31, Calif. . . . or for more information check CP 7115, pages 2 and 3.)

Three different corrosive gases can be compressed at same time with unit . . .

any one of cylinders can be serviced while pump is running

Uses: Although designed for a specific recycling operation in one of the major oil companies, unit can be utilized for a variety of applications.

Features: Introduction of hydraulic valves on each cylinder permits the compressing of three different corrosive gases at the same time or the use of one, two, or three cylinders as desired. Design also allows servicing of any one of cylinders while pump is running.

Diaphragm

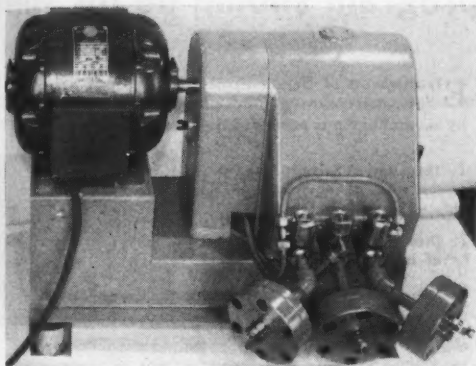
Description:
three in
Diaphragm
on comp
pressures
to return
with spring
pressures,
designed
ment at m
(Model C
Div., Scot
Ave., New
formation

Chlorination pictured

Booklet
protecti
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using th
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or spray
or asph
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Powder
inquiring
pages 2

Corrosion
than 75 c
. . . will b
of Corrosi
Exhibition,
tium, Ka

These Alloys Can Really Handle Hot Acids



Diaphragms of compressor are free-floating and independent

Description: Model GHP gas compressor has three independent diaphragm pumping heads. Diaphragms are free-floating and are actuated on compression stroke by hydraulic oil. Suction pressures of not less than 25 psi are required to return diaphragm. Compressor comes equipped with springs which unload at 600 psi. For higher pressures, extra springs can be used which are designed to unload at 1400 psi. Total displacement at maximum rpm of 300 is 567 cu in.

(Model GHP compressor is product of Pioneer Div., Scott & Williams Inc., Dept. CP, 350 Fifth Ave., New York 1, N. Y. . . . or for more information check CP 7116, pages 2 and 3.)

Chlorinated rubber coatings pictured in use

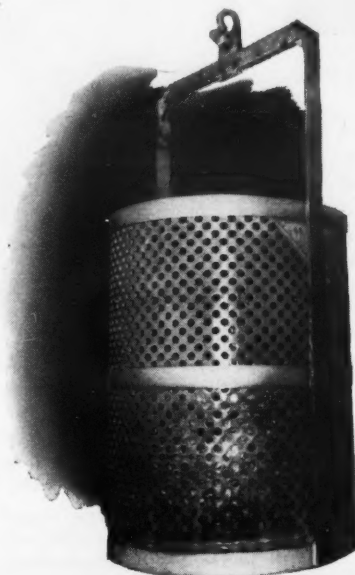
Booklet gives 35 case histories of the use of protective coatings based on chlorinated rubber. Water and sewage works, paper mills, storage tanks, and chemical and food processing plants using the coatings are illustrated. Twenty-page booklet also includes performance data on the finishes and instructions for applying by brush or spray to metal, wood, and various cement or asphalt surfaces.

"Protection with Parlon" is issued by Hercules Powder Co., Dept. CP, Wilmington, Del. When inquiring specify CP 7117 on handy form, pages 2 and 3.

Corrosion control products and services of more than 75 companies . . .

. . . will be shown at the National Association of Corrosion Engineers, 1954 Conference and Exhibition, to be held at the Municipal Auditorium, Kansas City, Missouri, March 15-19.

SAVES \$25,000 A YEAR—Agitator sweeps → and shafts made of HASTELLOY alloy B mix a corrosive and erosive mineral slurry containing 6 to 80 per cent sulphuric acid. The alloy's corrosion resistance has resulted in a maintenance saving of \$25,000 a year.



← **SAVES \$5,000 YEARLY**—HASTELLOY alloy C charging baskets have decreased maintenance by 90 per cent on this job. They resist oxidizing and reducing conditions caused by acid salts in a solution of hot sulphuric acid.



← 4 YEARS IN HOT H₂SO₄ AND HCl

Propellers, shafts, thermometer wells, and blow-off lines formerly used on this dye kettle had to be replaced every three months. HASTELLOY alloy D parts used in the same severe service are still good after four years.

HASTELLOY alloys can help solve your corrosion problems, too. For further information, contact the nearest Haynes Stellite Company office listed below.

HASTELLOY *alloys*

TRADE-MARK

Nickel-base, corrosion-resistant alloys available as sheet, plate, bar stock, welding rod, welded tubing and pipe, cast pipe and pipe fittings, sand and precision-investment castings.

"Hastelloy" is a registered trade-mark of Union Carbide and Carbon Corporation.

Haynes Stellite Company

A Division of
Union Carbide and Carbon Corporation

General Offices and Works, Kokomo, Indiana

Sales Offices
Chicago—Cleveland—Detroit—Houston
Los Angeles—New York—San Francisco—Tulsa

When inquiring check CP 7118 on handy form, pgs. 2-3

GASKETS

MADE OF
TEFLON

FOR
CHEMICAL-RESISTANT
SERVICE

- Chemical TEFLON-Jacketed Gaskets with various types of fillers for stainless steel, glass-lined steel and conical-flanged glass pipe. Available for all standard size pipe flanges. Seal at low bolt loads.
- Chemical molded TEFLON Snap-on Gaskets match contour of conical-end glass pipe, assure perfect automatic centering of joints and free flow of materials. For all standard pipe sizes from 1/4 in. to 6 in.
- Chemical TEFLON-Jacketed Adaptors provide a tight, safe seal between conical-end glass pipe, glass-coated steel or similar nozzles of large inside radii and vessels of glass-lined steel, porcelain, Havg, etc. Easy to handle, single units, combining a steel bearing ring for rigidity and a resilient core for perfect seal, contained in a chemically inert TEFLON Jacket.

Ask for Bulletin TG-953.

**UNITED
STATES
GASKET
COMPANY**

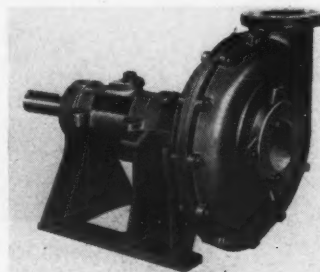
CAMDEN 1 • NEW JERSEY
FABRICATORS OF duPont TEFLON,
Kellogg KEL-F AND OTHER PLASTICS
Representatives in Principal
Cities Throughout the World

When inquiring check CP 7119 on handy form, pgs. 2-3

CORROSION

**No sealing water needed
for pump which handles
corrosives**

For pumping abrasive or corrosive solutions that must be delivered undiluted, manufacturer offers Centriseal Pump designed to operate without sealing water. Pumping



Pumping parts are protected
by molded rubber or alloys

parts are protected by molded Maximix rubber. For handling acids, the stuffing box, packing gland, and shaft sleeve are made of alloys. Mechanical parts are interchangeable with those of anti-friction-bearing type of Hydrosal Pumps.

(Centriseal Pump is product of The Allen-Sherman-Hoff Pump Co., Dept. CP, Wynnewood, Pa. . . . or for more information check CP 7120 on handy form, pages 2 & 3.)

**No special thinner
for rubber-base
floor finish . . .**

resists alkali, abrasion, and
weather

Uses: For protection of floors.

Features: Enamel needs no special thinner for application by brush, roller, or by pushbroom on large areas. It withstands alkali, abrasion, and weather and is suited for both wood and concrete floors.

Description: Hardcote Concrete Floor Enamel is made with Pliolite S-5, a synthetic rubber resin. It is manufactured in red, gray, green, black, and white.

(Coating is product of McDougall-Butler Co. Inc., Dept. CP, 2929 Main St., Buffalo 14, N. Y. . . . or for more information check CP 7121 on handy form located between pages 2 & 3.)

What a good "painting" program should do for you

EFFECTIVENESS of Ucilon Protective Coatings used for corrosion control in processing plants can be gauged by several obvious results of the program:

1. They have helped lengthen service life of equipment and reduced downtime
2. They have increased the interval between repainting
3. They have maintained a better looking plant



Ucilon® Protective Coating Systems were developed as specialized answers to processing plant painting problems. Systems are available to withstand acids, alkalis, alcohols, organic chemicals, moisture, salts and exposure. You can see that they make a painting program less costly and more effective by the many cases where they have given up to 5 years of service under severest conditions. Send for Bulletin MC-7.

*Trade Mark

UCILON Protective Coatings

One Group of the Many **UNICROMY** COATINGS FOR METALS

UNITED CHROMIUM, INCORPORATED 100 East 42nd Street, New York 17, N. Y.
Detroit 20, Mich.—Waterbury 20, Conn.—Chicago 4, Ill.—Los Angeles 13, Cal.
In Canada: United Chromium Limited, Toronto, Ont.

When inquiring check CP 7122 on handy form, pgs. 2-3

**MAKE
You can save money
and time with
MARMAN Band Clamps**

Quick-Coupler Clamp... a Marman design for instant removal and installation...Stainless Steel... tough, corrosion resistant, vibration proof.

There is a Marman design for every clamping operation. Order quick-coupler clamp direct from this advertisement. Write, wire or phone for catalog or engineering assistance. CP-3

SERIES NO.	360	365	450	455
MIN. WIDTH	5/8"	3/4"	1 1/8"	1 1/4"
BAND GAGE	.020	.020	.025	.025
BOLT SIZE	10-32NF-2 x 1 1/4"	10-32NF-2 x 2 1/4"	1/4-28NF-2 x 2 1/2"	1/4-28NF-2 x 3 1/2"
MIN. DIA.	2	3	4	7

**MARMAN
PRODUCTS CO., INC.**

71214 EXPOSITION BLVD.
LOS ANGELES 64, CALIF.

When inquiring check CP 7123 on handy form, pgs. 2-3

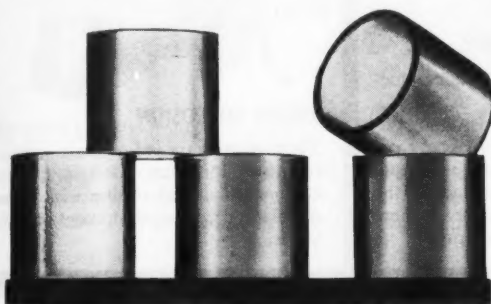
CORROSION

Raschig rings for atomic research withstand corrosives and temps up to 350°F . . .

fluorocarbon plastic resists hydrogen peroxide, hydrofluoric acid, and aqua regia

Uses: For applications in the chemical industry involving severe conditions with respect to corrosive materials handled at relatively high temperatures.

Features: When used in atomic energy studies, rings do not break or distort under thermal cycling up to 350°F. Tower packing remains unaffected after continued exposure to corrosives such as hydrogen peroxide, hydrofluoric acid, fuming nitric acid, and nitric acid.



Raschig rings made of fluorocarbon plastic retain properties when exposed to corrosives over a wide temperature range

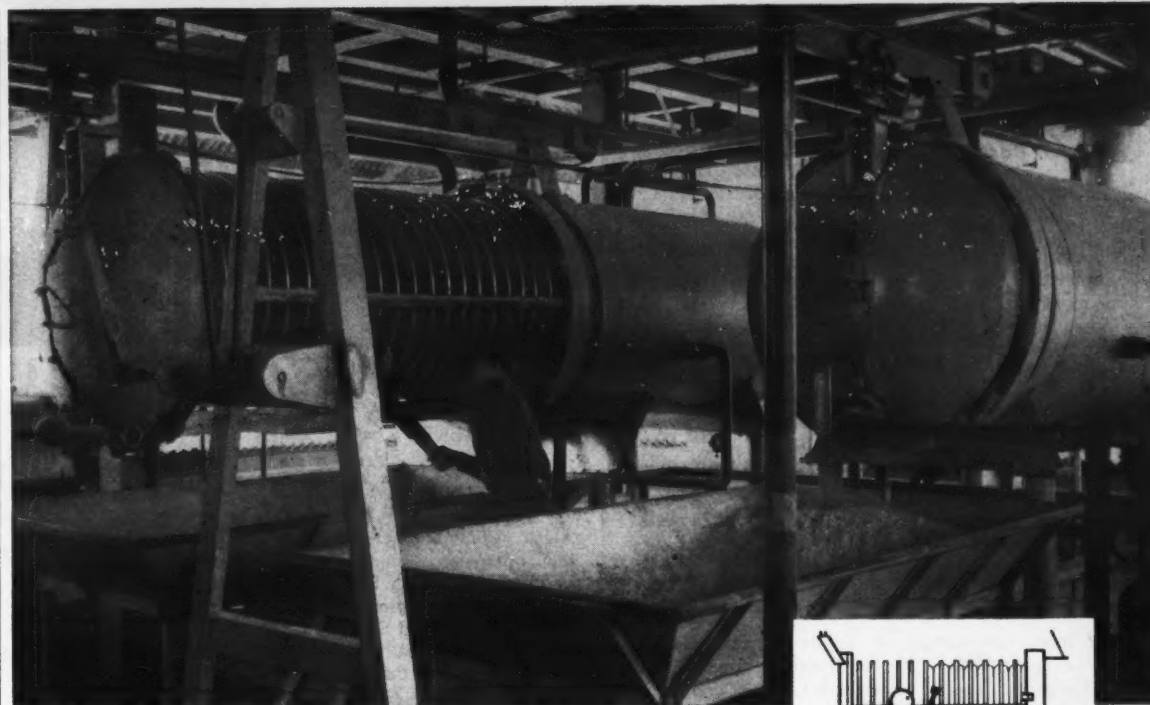
Description: Raschig rings are made from fluorocarbon plastic which retains its impact, compressive, and flexural strength from minus 320 to plus 390°F. Low thermal expansion of material permits accurate, compact tower packing. Plastic's non-porosity and zero water absorption, combined with its non-wettability, prevent retention of distillate and make tower purging more complete. The 1 1/4" diameter rings used in the atomic studies were injection-molded by W. S. Shamban & Co., Culver City, Calif.

(For further information on Kel-F Raschig rings write to Chemical Mfg. Div., The M. W. Kellogg Co., Dept. CP, P. O. Box 469, Jersey City 3, N. J. . . . check CP 7124, pages 2 and 3.)

How to stop rust is subject of general catalog

General catalog features 94 color chips and includes complete instructions for surface preparation and application of primers, short oil type, long oil type, machinery and implement finishes. Other rust preventives described are chemical and heat resistant types, sealers, oil field finishes, thinning oils, and masonry coatings.

Form 253 is issued by Rust-Oleum Corp., Dept. CP, 2799 Oakton St., Evanston, Ill. When inquiring specify CP 7125, pages 2 and 3.



NO FILTER CAKE DISPOSAL PROBLEM HERE

No danger of running afoul of municipal ordinances . . . no pollution of streams or lakes . . . no clogging or overloading of sewer lines.

With a Niagara Style "H" Horizontal Pressure Leaf Filter there's no sluicing . . . no washing . . . no flushing into the sewer. When filtration is completed, the leaves, mounted on a retractable carriage, roll out on a monorail. Simply tap each leaf with a rubber mallet. The cake drops off cleanly into a hopper cart . . . ready to be hauled away for easy dry disposal.

Of course, that's just one of many advantages provided by the Niagara Style "H" Filter. For instance:

- ★ It will filter liquids to clarity at rates up to 45,000 G.P.H.
- ★ It will give you easy recovery or disposal of as much as 150 cu. ft. of solids at a time.
- ★ It can be taken off stream, drained, opened, cleaned, closed, filled and precoated . . . by one man . . . in a matter of minutes instead of hours.

Niagara Filters

DIVISION

AMERICAN MACHINE AND METALS, INC.

EAST MOLINE, ILLINOIS

In Europe: Niagara Filters Europe, Post Box 1109, Amsterdam-C, Holland

★ Available in a wide range of capacities, it can be made of stainless steel or special alloys for corrosion resistance.

★ For the great majority of applications, the all-metal leaves require no cloths.

Niagara Pressure Leaf Filters, both vertical and horizontal, are cutting filtration costs, saving time, and improving product quality in hundreds of processing plants all over the country. Let us send you more interesting information. Just clip and mail the coupon . . . no obligation.

A COMPLETE FILTRATION ENGINEERING SERVICE

Years of experience in designing and producing filtration equipment for hundreds of widely varying applications . . . plus a thorough knowledge of processes and process requirements . . . have built for Niagara engineers a reputation for solving even the toughest filtration problems. We'd like to put this know-how to work for you . . . to test your samples for filterability . . . pilot the filtration for you . . . design, build and install a filter or a complete system to fit your process. Let's talk it over.

Niagara Filters Division, American Machine and Metals, Inc.
Dept. CP354, East Moline, Illinois

YES . . . we'd like to know more about Niagara Pressure Leaf Filters for . . . (product or operation)

☐ Have representative call ☐ Send Catalog NC1-53

Name _____

Title _____

Company _____

Address _____ Zone _____ State _____

When inquiring check CP 7126 on handy form, pgs. 2-3

Nine mile plastic pipe line delivers crude oil in Williston Basin . . .

butyrate plastic resists corrosive sulfuric gas in petroleum

Longest plastic pipeline on record has recently been completed in the Williston Basin, Montana. Extending more than nine miles, it is delivering crude oil from a storage tank battery to a tank car siding. Sulfuric gas in the paraffinbase crude being handled is resisted by the pipe, which is extruded from Tenite butyrate plastic. Steel pipe carrying this oil not only corrodes but clogs with paraffin within a relatively short time. Preliminary tests indicate that the butyrate plastic pipe will carry the oil with complete freedom of paraffin accumulation.

Pipe used in the installation is 3" ID, with a wall thickness of 0.125". Line is designed to operate at a maximum pressure of 90 psi at 60°F. It is scheduled for delivery of 2500 bbl of crude per day, with facilities for increasing capacity in future.

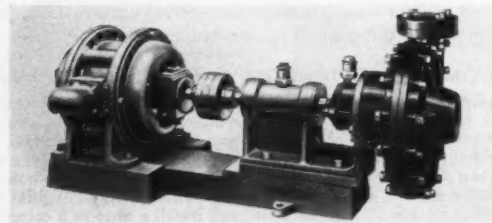
(For more information on Tenite butyrate plastic pipe contact Eastman Chemical Products, Inc., Dept. CP, Kingsport, Tenn. . . or check CP 7127 on handy form, pages 2 and 3.)

Pumps, valves, pipe, and fittings available in natural and Buna N hard rubber . . .

one compound can handle wet chlorine gas at 180° F

Uses: For handling corrosives at relatively high temperatures.

Features: One of the natural rubber compounds used for fabrication of the equipment can handle wet chlorine gas at temperatures up to 180°F unsupported.



Hard rubber centrifugal pumps are available in two types

Description: Centrifugal pumps, valves, pipe and fittings are manufactured in both natural and Buna N hard rubber. Natural rubber is generally restricted to temperatures not exceeding 120°F. Buna N hard rubbers are satisfactory for service up to 225°F. Both types are resistant to most inorganic acids, alkalis, and salts. Buna N also resists many organic chemicals.

Centrifugal pumps are available in two types — one having an open impeller and heavy casing,

ALCOA ALUMINUM



SAVES MONEY

Alcoa Aluminum actually costs less than other corrosion-resistant metals. For example, Alcoa Heat Exchanger Tubes cost ½ the price of Admiralty, ⅓ the price of Mild Steel, ⅓ the price of Stainless. Alcoa Aluminum tank cars cost ⅓ less than stainless steel cars, and Alcoa Aluminum Coiled Tube costs up to 40 per cent less than copper.



HIGH HEAT CONDUCTIVITY

Aluminum (2S) has a thermal conductivity of 0.50 cgs units at 20° C, equivalent to 1,450 Btu per hour per square foot per inch of thickness per degree Fahrenheit. This high thermal conductivity is an advantage in the use of aluminum in equipment where efficient heat transfer is important.



RESISTS CORROSION

The high resistance of Alcoa Aluminum to attack by water, foods and many chemicals has led to the use of this metal in processing equipment of many kinds.



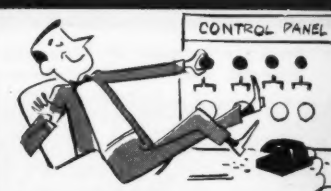
NONTOXIC

Alcoa Aluminum is resistant to attack by foods. Moreover, aluminum and its compounds are nontoxic. Aluminum equipment has found widespread use in the processing of foods and drugs.



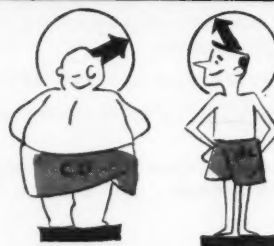
WON'T "SPARK"

Because of its nonsparking characteristics, Alcoa Aluminum is used with explosives or inflammable materials. Combined with its other advantages, aluminum is ideal for powder plant machinery, ventilator fans in industrial plants, shovels in mines and chemical plants, and containers and tanks for gasoline, as well as chemicals.



EASY WORKABILITY

Manufacturers find aluminum easy to machine, shape, form, cast, roll, extrude, forge and assemble with standard tools and machinery. It can be joined by all methods of welding. Also certain alloys can be brazed.



LIGHT WEIGHT

Alcoa Aluminum drums and barrels, tank cars and trucks have the advantage of light weight, easier handling and more pay load.



GOOD PERFORMANCE AT LOW TEMPERATURES

Down to -320° F, Alcoa Aluminum actually improves 23 per cent in yield strength, 80 per cent in elongation, 67 per cent in tensile strength. Millions of pounds of aluminum are now in use for tonnage oxygen production, nitrogen removal, dewaxing, propane chilling, ethylene extraction and many other low temperature processes.

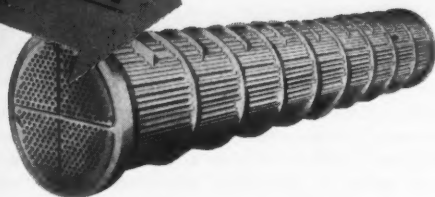


PROTECTS PRODUCT PURITY

Alcoa Aluminum will not discolor or harmfully contaminate products processed in it. It will not deteriorate lubricating oils nor form sludge or gum. Leading process engineers specify aluminum processing equipment for such compounds as acetic acid, naval stores and hydrogen peroxide.

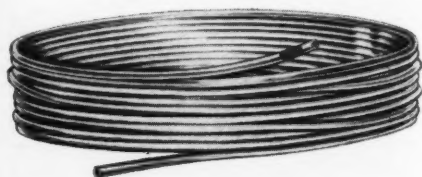
is used in the Process Industries

WHERE?



HEAT EXCHANGER TUBES

An average-sized refinery can save \$50,000 in first cost by using Alcoa Aluminum Tubes. For details, write for our free booklet, *Alcoa Aluminum Heat Exchanger Tubes*.



COILED TUBE

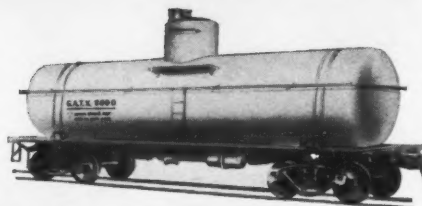
Alcoa Utilitube® is made of a specially selected alloy providing easy workability and high fatigue strength. It's used for pneumatic control circuits, fuel lines, lubricating lines and hydraulic systems. For details, write for the free booklet, *Alcoa Utilitube*.

STORAGE TANKS



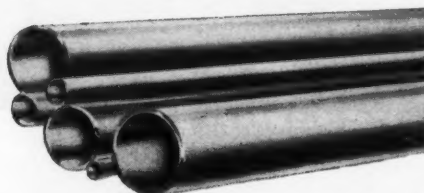
ALCOA
ALUMINUM

ALUMINUM COMPANY OF AMERICA



TANK CARS

Ask your car builder about the advantages of lightweight aluminum rolling stock. Or better still, write Alcoa. We have facts and figures on hundreds of liquid ladings that can be safely, economically shipped in aluminum.



PIPE

Alcoa Aluminum Pipe and Fittings offer many advantages to the chemical, petroleum and food processing fields. Also used for oil, gas, water, compressed air and mine drainage pipe lines. Write for the booklet, *Alcoa Aluminum Pipe and Fittings*.

Purity of many chemicals is protected by storage in aluminum tanks, ranging in size from the very smallest to more than 200,000 gal. capacity. We'll gladly send you the names of reputable fabricators of aluminum storage tanks.

ALUMINUM COMPANY OF AMERICA
902-C Alcoa Building, Pittsburgh 19, Pa.

I would like more information on:

- ☐ Alcoa Heat Exchanger Tubes ☐ Alcoa Utilitube
☐ Alcoa Aluminum for Tank Cars ☐ Alcoa Aluminum Pipe
☐ Aluminum Storage Tank Fabricators

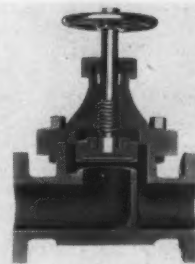
Name _____

Title _____

Company _____

Address _____

CORROSION



Stems and disks of rubber valves are metal reinforced

and the other being of lighter construction using a closed impeller. Both pumps use a carbon seal in place of conventional packing. This allows for complete protective rubber covering of metal shaft and eliminates typical friction and leakage troubles. Pump capacities range from 15 to 100 gpm with discharge heads up to 90 feet of water.

Globe, angle, and Y valves are furnished in sizes from 1 to 4". All stems and disks are metal reinforced. Disks with soft rubber seating surfaces are renewable. Pipe and fittings are also



All rubber fittings offer unobstructed flow

available in 1 to 4" sizes. Fittings provide full flow for size specified. They are recommended for working pressures of 50 psi.

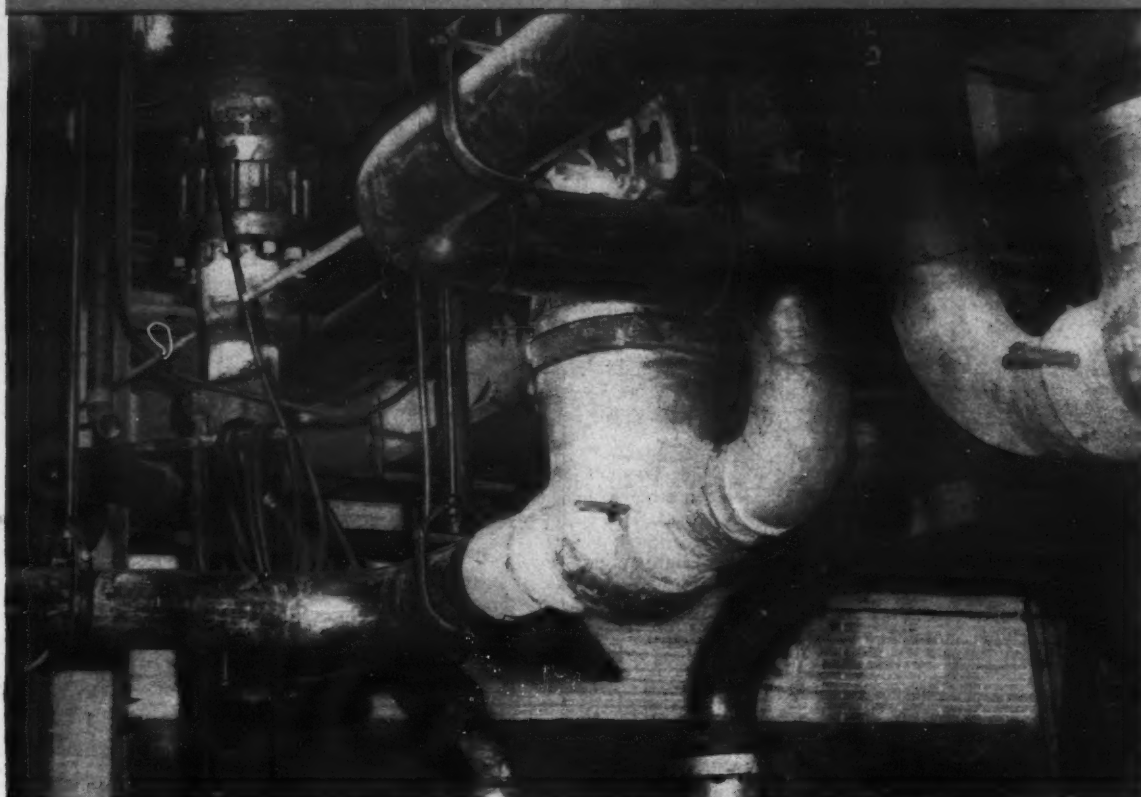
(Rubber pumps, valves, pipe, and fittings are products of Vanton Pump & Equipment Corp., Dept. CP, Empire State Bldg., New York 1, N. Y. . . . or check CP 7129 on handy form, pages 2 and 3.)

If you're after a coating or special material to solve a corrosion problem . . .

try looking in the alphabetical Product Directory on page 214 to 217. Your Editors started this service many years ago, to make it easy for you to locate your interests in each issue.

When inquiring check CP 7128 on handy form, pgs. 2-3

STRONGER THAN PIPE



Boiler feed discharge piping shown under construction above will operate at 2700 psi and 430° F.

Grinnell Welding Fittings

exceed bursting strength of seamless pipe

Grinnell Welding Fittings are designed and processed to have a bursting strength greater than the calculated bursting strength of the seamless pipe to which they are to be welded.

Welding elbows and bends are made from seamless steel pipe by a forging process which produces uniform wall thickness at all points; there is no thinning of outer wall.

Welding tees and crosses are made from seamless pipe by a drawing process which provides

extra metal and protection at the crotch, where highest stress occurs.

All Grinnell Welding Fittings are process stress-relieved, thus improving grain structure and increasing the strength of the metal.

With all Grinnell Welding Fittings, you get true circularity; smooth, clean inside surface; full, effective radius; easy, sweeping turns; accurate bevels; and true included angles. Available in a wide range of types and sizes, metals and alloys. Send for descriptive catalog.



GRINNELL
WHENEVER PIPING IS INVOLVED



Grinnell Company, Inc., Providence, Rhode Island

Coast-to-Coast Network of Branch Warehouses and Distributors

pipe and tube fittings • welding fittings • engineered pipe hangers and supports • Thermolier unit heaters • valves
Grinnell-Saunders diaphragm valves • pipe • prefabricated piping • plumbing and heating specialties • water works supplies
industrial supplies • Grinnell automatic sprinkler fire protection systems • Amco air conditioning systems

When inquiring check CP 7130 on handy form, pgs. 2-3

CORROSION

Labor for lining tanks reduced by use of heavy coating . . .

Neoprene formulation requires 4 to 7 coats in place of 10 to 20

Uses: For lining tanks with Neoprene.

Features: High solids formulation of coating is said to eliminate 10 to 20 coat systems formerly required to line tanks with Neoprene. Brush coats of 10 to 20 mils can be applied so that 1/16" linings can be obtained with 4 to 7 coats. This results in considerable saving of labor.

Description: Neoprene 100 contains anti-oxidants, softeners, and fillers which are themselves inert to corrosives. Heavy coat characteristic is combined with excellent pot life and corrosion resistance comparable with heat-cured Neoprene. Neoprene primer 100 is also available, product being suitable for both sandblasted and wire-brushed rusty steel surfaces.

(Coatings are products of Carboline Co., Dept. CP, 331 Thornton Ave., St. Louis 19, Mo. . . or for more information check CP 7131 on handy form, pages 2 and 3.)

Metals made corrosion resistant and colorful by vinyl plastic laminating process . . .

product has high abrasion resistance, can withstand 180° bends

Uses: Products that can be made from plastic-metal laminate include chemical piping and ducts, containers for chemicals, and industrial machine housings. Material can also be used for decorative and weatherproof building siding and for interior paneling.

Features: Process combines structural strength of metal with bright colors and corrosion resistance of vinyl plastic. Laminate has a high abrasion resistance. Bond of plastic to metal is so strong that 180° bends and deep draws can be made without separating the vinyl from the metal.

Description: Laminate is made by rolling rigid or semi-rigid Marvinol vinyl sheets with heated, adhesive-coated strips of steel or aluminum. After rolling, adhesion is effected in seconds under heat lamps or another suitable heat source. Vinyl films range from .002 to .02" thick. Cost of laminate is higher than galvanized iron, but only about one-third that of comparable gage stainless steel.

Laminate can be sheared, drilled, or punched without chipping. Laminated panels have been exposed outdoors for two years in an industrial atmosphere without breakdown. Ducting made from material has carried sulfuric and nitric acid fumes for a year without breakdown.

In other tests panels have been exposed to 100% humidity at 160°F for 1000 hr without adhesion failure or blistering, and with only slight color

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changes. Oven aging at 150°F for 600 hours has no perceptible effect on adhesion or color.

Sheets of laminate are being made for tests and limited production work at Winchester, Pa. plant of O'Sullivan Rubber Corp.

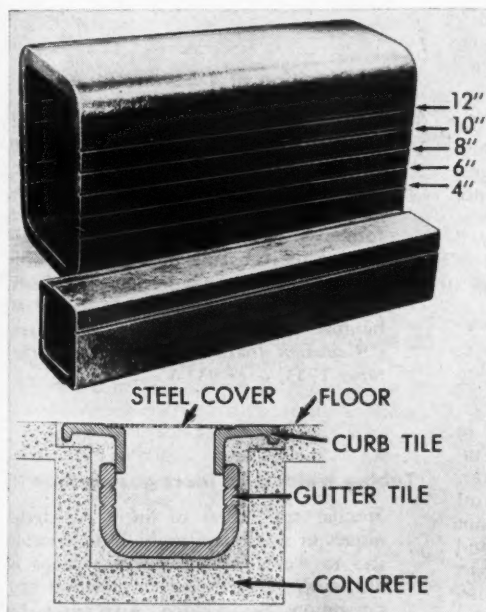
(Information on process, which will be made available to industry, may be obtained from Naugatuck Chemical Div., United States Rubber Co., Dept. CP, 1230 Ave. of the Americas, New York 20, N. Y. . . or check CP 7132, pages 2 and 3.)

Corrosive sewage disposal problems solved by drain designed by Dow Chemical Co. . .

channel pipe is made of vitrified clay

Uses: For sloping drains and gutters in chemical plants and other corrosive service.

Features: Drain was designed by Dow to handle sewage disposal problems presented when corrosives are being handled. Pipe is made of vitrified clay for protection against corrosion by acids and other chemicals.



Channel can be covered with grill or floor plate

Description: Drain is manufactured in double sections with five grooves or "kerfs" in each side. This enables builder to divide double sections into single sections of any desired depth from four to twelve inches. Curb tile made of same material is used to cover upper edges of channel pipe, making entire installation flush with floor.

(Chemi-Drain channel pipe is manufactured by The Logan Clay Products Co., Dept. CP, Box 6981A, Logan, Ohio . . . check 7133, pages 2 and 3.)

1 2 3 4 5 6 7 8 9 10 11 12 13 14 15

CORROSION RESISTANCE

302	316	430
-----	-----	-----

FULLY RESISTANT

RESISTANCE TO SCALING

314

MACHINABILITY

400	410	420	430
-----	-----	-----	-----

NOW!

HERE'S THE ANSWER TO FAST ACCURATE SELECTION OF STAINLESS STEELS

The answer to most of your questions about stainless steels are right at your finger tips, when you use Crucible's unique new Stainless Steel Selector.

Want to know the machinability characteristics of a stainless grade? Resistance to corrosion or scaling? Physical or mechanical properties? You can get the answers to these and other questions simply by setting the arrow on the Selector slide at the proper window. It's just as quick and easy as that.

And almost as fast as you get the answer, you can get the steel you need. For many of the REZISTAL stainless steels shown on the Selector are carried in stock in Crucible warehouses conveniently located throughout the country.

To get your free copy just fill in and mail the coupon. Better do it now.

HOW THE SELECTOR WORKS:

Start with the problem. For example, resistance to corrosion in contact with copper sulfate. Just set the slide at the proper index number shown on the Selector (in this case on the back), and you have the answer in a second — grades 302 and 316 are fully resistant to this form of attack.

Crucible Steel Company of America
Dept. CP, Henry W. Oliver Building
Pittsburgh, Pa.

Name _____

Company _____ Title _____

Address _____ City _____ State _____

CRUCIBLE

first name in special purpose steels

54 years of Fine steelmaking

STAINLESS STEELS

CRUCIBLE STEEL COMPANY OF AMERICA, GENERAL SALES OFFICES, OLIVER BUILDING, PITTSBURGH, PA.
REX HIGH SPEED • TOOL • REZISTAL STAINLESS • MAX-EL • ALLOY • SPECIAL PURPOSE STEELS

When inquiring check CP 7134 on handy form, pgs. 2-3

There's no "do it now" about cleaning an



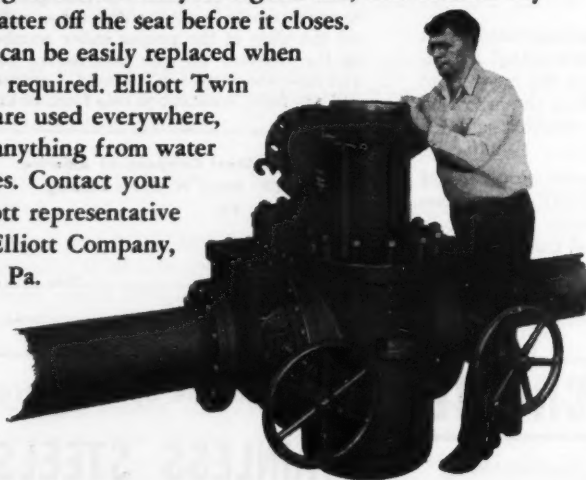
ELLIOTT TWIN STRAINER

No need to interrupt some vital maintenance job to dump the fouled basket on one of these non-stop straining units. The alternate basket will take on the job with the turn of a couple of handwheels, cutting out the fouled basket for attention any convenient time within a reasonable period.

Not that cleaning is so much a job. It isn't—all that's necessary is to back off the cover nuts a few turns, spin out the washers, lift the cover, pull out the basket, dump it, and reverse the process. That basket is open at the top, too, for easy dumping. No fussing to get out the trapped trash.

TWIN STRAINERS have a number of features to help them keep on the job. Valve discs, for instance, have an inserted rubber ring as wear-worthy as a good tire, that brushes any foreign matter off the seat before it closes.

This ring can be easily replaced when ultimately required. Elliott Twin Strainers are used everywhere, handling anything from water to molasses. Contact your local Elliott representative or write Elliott Company, Jeannette, Pa.



ELLIOTT Company

Accessories Dept.



STEAM TURBINES • MOTORS • GENERATORS • HEATING HEATERS • EJECTORS • CONDENSERS • CENTRIFUGAL COMPRESSORS • TURBOCHARGERS • TUBE CLEANERS • STRAINERS

A3-2

When inquiring check CP 7135 on handy form, pgs. 2-3

briefs

from contemporary publications

"Cooling potential" aids in heat transfer calculations

For transfer of heat in processes that involve moist air and water, the "cooling potential," a function of vapor pressure and temperature difference, offers advantages over the present use of specific enthalpy. Cooling potentials are particularly helpful where large temperature ranges are encountered as in cooling towers that serve steam condensers. Thirteen pages, 5 tables, 4 figures, 6 references. ("Refrigerating Engineering," Nov. 1953, page 1207)

How to install and maintain vibrating screens

Practical suggestions that pertain to vibrating screens are covered under the headings of correct screen feeding, chute design, suspension of mounted screens, location of motors, friction, maintenance of screen surface, and screen balance. Four pages, 7 figures. ("Rock Products," Nov. 1953, page 81)

Nomographs for costs of refrigeration

Large, easily read nomographs aid in design of refrigeration equipment intended for process work, cold storage, and air conditioning. The water cost chart covers rate of flow of water, amount of refrigeration, length of operation, and unit water cost. The power cost chart has scales for refrigerating capacity, power requirement, length of operation and unit cost of electricity. Three pages, 2 figures. ("Heating and Ventilating," October 1953, page 87)

Paper mill lubrication

In the paper mill, contamination of lubricants by water, dust, and pulp imposes special problems. This discussion of lubrication of barkers, grinders, chippers, screens, deckers, beaters, jordans, wet

pulp machines, cylinder machines, and fourdriniers is supplemented by sections on economic factors, supervision, and training of those charged with oiling and greasing. Four pages, 9 photographs. ("Paper Industry," Nov. '53, p. 876.)

How to locate buried pipes

A flashlight, probe, and a length of wire are used to identify a particular pipe among many others and to find a buried pipe. One page. ("Petroleum Refiner," Dec. 1953, page 140.)

Decomposition of n-butane by heat

Studies of the thermal decomposition of n-butane at pressures between 40 and 130 mm of mercury and at 442°C show that, below 9 per cent decomposition, hydrogen, methane, ethane, and ethylene are formed at rates that depend on the pressure of the n-butane in accordance with first-order mechanisms. Tests indicate that nitric oxide is inefficient as an inhibitor. 12 pages, 4 tables, 7 figures. ("Canadian Journal of Chemistry," October 1953, page 937.)

Tubing welded by inert gas method

Specific application of inert gas techniques to single and multiple pass welds and to welds without backing strips is discussed. Operational information and precautions are included. Five pages, 13 photos. ("Combustion," Dec. '53, p. 41.)

Aid in designing exhaust systems

Sixteen rules and suggestions that bear on fans, along with tables of lost pressure and horsepower, aid in the design and choice of fans for exhaust systems. Five pages, 2 tables, 5 figures, one of a series of papers. ("Sheet Metal Worker," Jan. 1954, page 68.)

Metering

A series of new below accurat portable character pages, Instru

Highly r through

Worki of alu prepar reflect bath c acids, 40°C. bath c nitric pages, ("Me page

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Conver paper

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briefs

from contemporary publications

Metering air in the field

A series of small metering orifices enables a new meter to measure air at flow rates below 50 cu ft per min. The device is accurate, simple to operate, inexpensive, portable, and sturdy. An assembly and characteristic curves are included. 2 pages, 3 figures. ("Journal of Scientific Instruments," Oct. 1953, page 382.)

Highly reflective aluminum through anodizing

Working with 1S and 2S test specimens of aluminum, Japanese research chemists prepared surfaces of 75 and 90 per cent reflectivity by (1) electropolishing in a bath containing phosphoric and sulfuric acids, chromic oxide, and water above 40°C., and (2) chemical polishing in a bath containing phosphoric, sulfuric, and nitric acids, and urea at 110°C. Five pages, 9 tables, 2 plots, 3 photographs. ("Metal Finishing," September 1953, page 69)

Determination of metals in phosphating solutions

From Sweden comes a volumetric method for quantitative determination of manganese, zinc, and sodium in phosphating solutions. Relative errors are three and two per cent for accelerated and unaccelerated solutions, respectively. Three pages, one table. ("Metal Finishing," Nov. 1953, page 63)

Converting of paper and paper board

In a series of lectures given at Western Michigan College, experts in the converting of paper and paper board discuss packaging products, single service paperware, business and stationery products, personal and household products, paper products for industrial use, and testing for the paper converter. One hundred and seventy-nine pages, 10 tables, 139 figures, 31 references. ("Paper Trade Journal," Nov. 13, 1953, page 101)

Separation of liquids from gases by entrainment

Liquid entrainment separators are surveyed under the headings of types, design, and performance, with particular attention to analysis and solution of practical problems. Comprehensive comparisons of scrubbers and centrifugal, impingement, and entrainment separators is backed up with rigorous derivations of equations that bear on design. Twenty-four pages, 12 tables, 20 figures, 1 photograph, bibliography. ("Chemical Engineering," October 1953, page 213)

Finishing magnesium surfaces

Consideration of galvanic corrosion, anodic treatments, phosphate touchups, Iridite No. 15, and new primers supplement schematic diagrams in answering questions pertinent to the finishing of magnesium surfaces. Six pages, 2 tables, 3 figures. ("Modern Metals," Dec. 1953, page 66.)

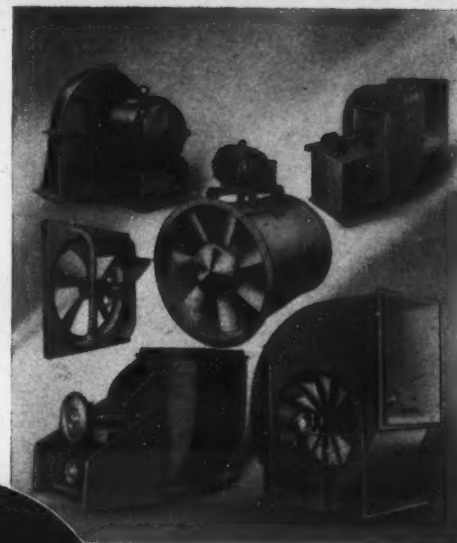
Canadian softwood kiln-dried at high temperatures

At the Forest Products Laboratories of Canada, exploratory studies of kiln-drying of spruce, pine, hemlock, fir, and cedar at temperatures of 228°F to 237°F show rapid drying, slight discoloration, severe case-hardening, and considerable variation in eventual moisture content. No definite conclusions as to the effect of high temperature drying on the strength properties are drawn. Five pages, 3 tables, 1 plot, 2 photographs. ("Wood," September 1953, page 342)

Industrial applications of ultrasonics

Ultrasonics are employed to control chemical processes, remove dirt, or locate flaws in the ceramics, chemical, food, glass, metal working, paint, paper, petroleum, rubber, and textile industries. Cavitation and methods of producing sound waves are discussed. 5 pages, 19 photographs. ("Dun's Review and Modern Industry," Oct. 1953, page 48.)

MAINTENANCE DIVIDENDS from PROPER FAN SELECTION



In the "Buffalo" Test Room, engineers put fans thru every conceivable performance test. Continual improvement — better performance — lower fan maintenance costs — are the results. In the station at left, thrust, noise, and performance characteristics are checked.

have, in our engineering files, almost every problem which AIR has been asked to solve.

We have the Engineering organization which produced, in 1914, the first edition of "Fan Engineering", ever since, the Bible of the air industry.

We do not hesitate to say, occasionally, "It cannot be done with present equipment."

Why not capitalize on this accumulated experience? Why not get the benefit of the "Q" Factor* that "Buffalo" builds into the fans, air cleaning and conditioning equipment, which our engineering sales representatives, in principal cities are ready to discuss with you? Their advice is impartial.

No obligation — and no regrets.

If you keep records of maintenance costs, you'll already know that first cost can be of minor importance on some equipment. On fans, for example, over a period of years, maintenance costs can be considerable. We believe, after seventy-six years' experience in air handling, that some of this excessive maintenance cost comes from improper selections of equipment.

"Buffalo" manufactures 20 lines of fans and blowers, for every service from residential kitchen ventilation to sub-zero airplane instrument testing — from 20 CFM to 600,000 CFM. We



* — The "Q" Factor — The built-in Quality which provides trouble-free satisfaction and long life.

BUFFALO FORGE COMPANY

524 BROADWAY

BUFFALO 4, NEW YORK

Publishers of "Fan Engineering" Handbook
Canadian Blower & Forge Co., Ltd., Kitchener, Ont.
Sales Representatives in all Principal Cities

VENTILATING AIR CLEANING AIR TEMPERING INDUCED DRAFT EXHAUSTING
FORCED DRAFT COOLING HEATING PRESSURE BLOWING

When inquiring check CP 7136 on handy form, pgs. 2-3



"that new snap-on pipe insulation"... **Cheaper in the long (or short) run!**

Whether you have a pipe insulation job involving 20 or 20,000 feet, it will pay you to use G-B ULTRAFINE PIPE INSULATION — the new one-piece pipe insulation molded of fine glass fibers that comes in 6' sections. This revolutionary time-saver costs no more than other insulations — and offers application cost savings up to 50%!

Any man can readily handle 6' sections that only weigh several pounds. To apply, simply spread the single seam, slip it over the pipe, let it snap perfectly in place. You can hold the seams together with staples — no wiring or banding necessary. Then finish as desired — even painting the insulation if you wish. If it rains before the job is finished, there is no harm done. Ultrafine does not absorb moisture, has stood up under 10" of rainfall, followed by hot days and high humidity without damage of any kind.

G-B ULTRAFINE PIPE INSULATION has many other unusual properties that save time and money. It's flexible, resilient . . . won't break or crumble . . . outstanding in thermal efficiency . . . dustfree . . . easy to cut with a knife. Try some right away, and you'll never insulate hot or cold lines any other way!

WRITE TODAY FOR SAMPLES AND COMPLETE INFORMATION



GUSTIN-BACON MFG. CO.

254 W. 10th St., Kansas City, Missouri

New York • Chicago • Philadelphia • San Francisco
Los Angeles • Houston • Tulsa • Dallas • Detroit • St. Louis

When inquiring check CP 7137 on handy form, pgs. 2-3

processing equipment



Arrow indicates eccentric motor on high-speed screen

Seven tons of talc per hour pass through 3' by 7' high-frequency 30-mesh screen

**Rapid oscillation provided by
interchangeable eccentric motor
reduces blinding and conglomerat-
ing tendencies**

Uses: Wet or dry screening operations, particularly in the range of 2 to 425 mesh. Well-suited for use as a dewatering conveyor. Typical materials being handled include: talc, limestone fines, fine silica sand, rubber sulfur, zinc stearate, titanium oxide, gypsum, fertilizer, aluminum oxide, lepidolite, plastics, resins and fillers.

Features: The extremely high oscillational speed of unit minimizes blinding, discourages conglomeration, assures high capacity in small space. For example, one 3 by 7' screen is screening 7 tons/hr of talc through 30 mesh. In another case, a 1½ by 4' unit is wet-screening 3 to 4 tons of titanium oxide per hour through 200 mesh. Vibrating motors rated at 1 hp are used to operate the screen.

Motors are interchangeable, simplifying maintenance. They have no exposed moving parts and are totally enclosed (explosion-proof motors also available). They can be mounted anywhere along screen frame without throwing the screen assembly out of balance. Special float mountings confine action to screen body, keeping only unwanted vibrations out.

Description: Oscillation amplitude is adjusted by a quick setting of weights on numerically graduated, eccentrically loaded flywheel of motor. The standard motor operates at 3600 rpm, but motor-generator sets available increase speeds to 5000 rpm.

Machine is compact, may be operated at any angle, and may be easily dust-housed. The screen cloth is supported in hoop tension so that it becomes an integral part of the machine. Because of this, flutter and destructive fatigue are eliminated, and vibration is transmitted evenly across screen surface.

(Development of Derrick Mfg. Co., Dept. CP, 1754 Walden Ave., Buffalo 25, N. Y. . . . check CP 7138, pages 2 and 3.)

CHEMICAL PROCESSING

Agitator
to let re



The react

Uses: 250 psi, in
Features: on agitator
open on a
Thus, clear
out use of
and shaft.

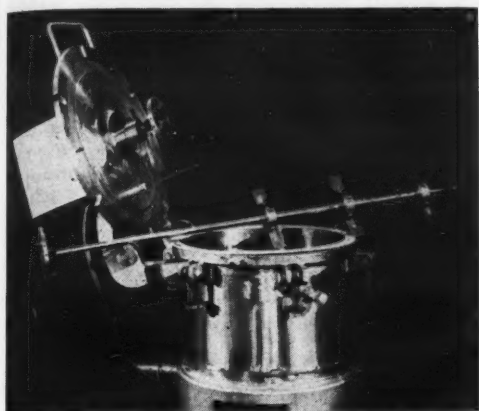
Description: less steel.
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CP, 588
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**Agitator shaft "breaks"
to let reactor cover swing back**

**Magnetic coupling simplifies task
of cleaning, charging vessel**



The reactor with agitator shaft (above) shown broken at magnetic coupling

Uses: Conducting reactions at pressures up to 250 psi, in batch sizes up to 100 gal.

Features: Positive-locking magnetic coupling on agitator shaft permits reactor cover to be swung open on a hinge, exposing full inside of vessel. Thus, cleaning and charging are done easily, without use of crane to lift cover and attached agitator and shaft.

Description: Reactor is built entirely of stainless steel. It is supplied with a jacket with automatic temperature control (if desired), variable-speed agitator drive, and provisions for sparging and addition of reagents and catalysts (automatically if desired).

(Access-A-Bilt reactors are made by Fermenter & Reactor Div., Stainless & Steel Products Co., Dept. CP, 588 Madison Ave., New York 22, N. Y. . . . or for more information reader may simply check CP 7139 on the convenient Reader Service slip located between pages two and three.)

Evaluation of activated carbons need not be a mathematical wrestling bout . . . for the simple way see pages 190 and 192.

When you compare Centrifuges . . .
consider the

GREATER FILTERING AREA

**REINEVELD
CENTRIFUGE**

One of the many outstanding advantages offered by every Reineveld Centrifuge is its deeper bowl . . . which leads to greater filtering area and increased production.

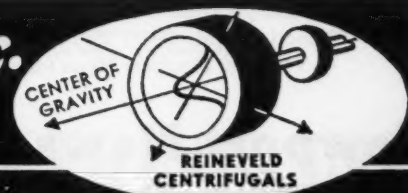
Through its patented construction Reineveld Centrifuges give you a *deeper* bowl in any frame size than any other centrifuge. This deeper bowl results in *more filtering surface* in the Reineveld than in any other centrifuge with the same bowl diameter.

This extra filtering surface gives you extra production . . . resulting in **MORE PRODUCTION FOR EACH DOLLAR OF INVESTMENT** with Reineveld Centrifuges. This extra production is possible *only* with Reineveld Centrifuges.

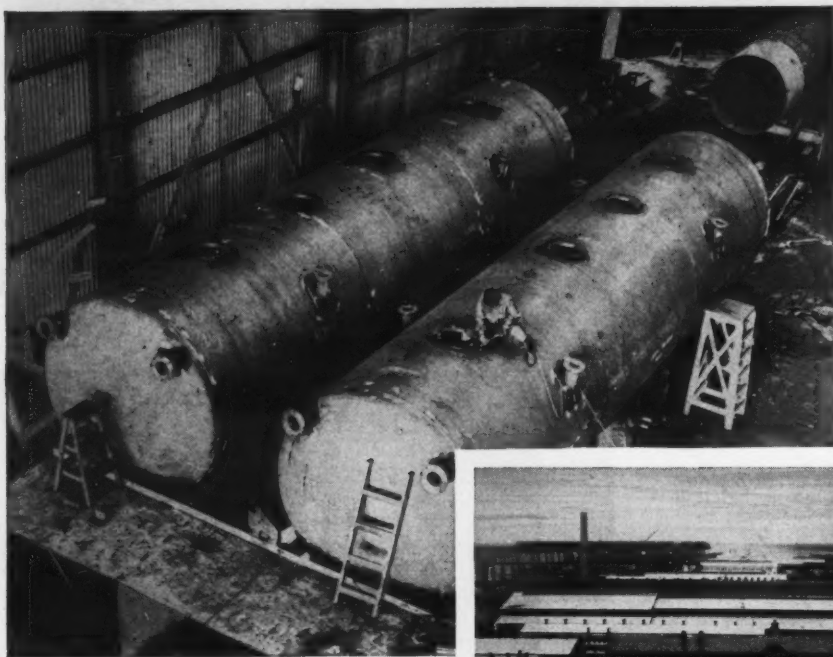
**Booklet 5-RC-3 can help you judge the Reineveld Centrifuge for yourself.
Write for it today.**

Heyl + Patterson, Inc.
"SINCE 1887"

55 FORT PITT BLVD. PITTSBURGH 22, PA.



When inquiring check CP 7140 on handy form, pgs. 2-3



A half mile of pressure vessels

These are two of seventy — over 1/2 mile — of 38 1/2-foot vacuum tank casings built to meet the quality requirements of a well-known chemical maker.

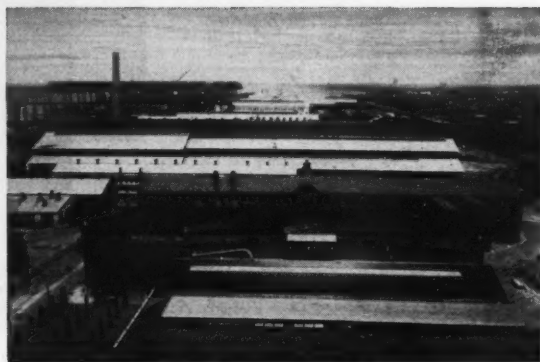
The buyer also benefits from many savings made possible by Newport News extensive heavy fabrication equipment and the sixty years experience in using it.

Do you plan installations of heavy production equipment? You can command the services of Newport News for weldments of

corrosion-resistant, alloy and clad metals in almost any size or shape, plus the required engineering background and complete welding and stress-relieving skills.

It will pay you to get the facts, shown in *Facilities and Products*. As you glance at its photos and brief captions, you'll see why Newport News can turn out — at low cost — specialized heavy equipment for chemical plants.

Send for *Facilities and Products* — free — today.



A Mile of Shops — Each shop is devoted to a special type of heavy production. Included are complete Machine Shops, casting, forging and other facilities which offer all of the advantages of the execution of the complete job.

Newport News
Shipbuilding and Dry Dock Company
Newport News, Virginia

When inquiring check CP 7141 on handy form, pgs. 2-3

PROCESSING

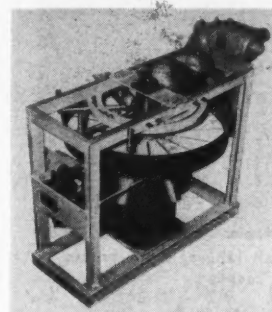
Drive of horizontal filter is built right in . . .

rotary vacuum unit boasts high capacity, speedy dewatering, excellent cake washing

Uses: Filtration of coarse crystalline materials, fibrous pulps, and other free-filtering applications.

Features: Reported to be high capacity, fast dewatering, and excellent cake washing. Self-contained driving unit is mounted in main frame, eliminating costly separate foundations and permitting skid-mounting of smaller size filters. Main bearing and drive units are enclosed, protected from splash and corrosion. Filter is readily adaptable to totally enclosed construction.

Description: Horizontal rotary vacuum filter is available in sizes to 110 sq ft filter area and in many



This horizontal filter is 3' in diameter and has 7.6 sq ft of filter area

materials of construction, including rubber-covered steel. It consists of a revolving table or pan, inside bottom of which is divided into wedge-shaped hollow sections covered with filter cloth or screen. Each section is connected to a valve mechanism that controls dewatering, washing, and cake discharging as the table rotates. Cake is removed by a revolving scroll

and dropped into chute or conveyor.

Many combinations of washing techniques can be provided, including multiple-stage and counter-current. Filtering and washing operations are clearly visible.

(Filter is produced by Filtration Engineers, Inc., Dept. CP, 155 Oraton St., Newark 4, N. J. . . or for more information check CP 7142 on handy form, pages 2 and 3.)

"Development size" drives added to mixer line

Manufacturer announces addition of two drive units for his Dispersator mixing equipment. Built for operation in the 30 to 300 gal batch range, they are of ideal size for development and small-scale production work. Both have flexible motor couplings, sealed-for-life bearings, and sturdy welded or cast support frames.

Series 2400 drive is for beam or channel mounting with open tanks. Series 3200 is for flange mounting. (Announced by The Premier Mill Corporation, Dept. CP, Geneva, N. Y. . . or for more information concerning manufacturer's product, check CP 7143 on convenient Reader Service slip which is located between pages 2 and 3.)

PROCESSING

Metallic contamination eliminated with lined ball mill . . .

permits grinding corrosive materials

Uses: Grinding material where elimination of contamination is important.

Features: Besides elimination of product contamination, operating noise is reduced, and weight of ball mill is decreased. Since lining is inert, corrosive materials can be ground.

Description: Ball mills have cylindrical shell constructed of Linatex rubber. Two metal face plates are covered internally with the same material. Tie rods, passing through solid shell, bolt on face plates. Linatex, weighing less than water, allows weight of mill to be lessened. Ball mills are available to meet varying requirements.

(Linatex ball mills are made by Linatex Corp. of America, Dept. CP, Rockville, Conn. . . or for more information check CP 7144 on handy form, pages 2 and 3.)

3000 to 4000 lb/hr handled with movable dry powder mix and blend plant . . .

compact setup weighs only 500 pounds and stands 10 x 10 x 11½ feet high

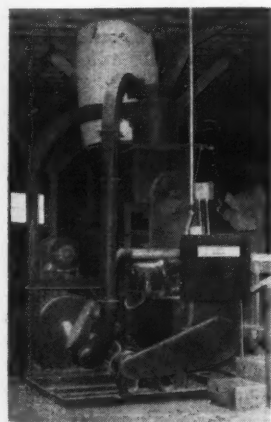
Uses: Unit is designed for mixing and blending dry powders.

Features: Unit is movable, compact, and reported to be economical to operate.

Description: Weighs about 500 lb and measures 10 x 10 x 11½' high. Comes complete with dust hood, brush sifter, pre-mixer, supporting framework, motors, drives, safety guards, and enclosed switch panel with push-button stations. Heart of system is closed circuit pneumatic conveyor-blender, which blends, conveys, and removes dust at both the loading and packaging stations.

System can handle 3000 to 4000 lb/hr of finished, blended insecticide dusts meeting spatula tests. If specified to handle toxic or hazardous dust formulas, special equipment is available.

(Dry powder mixing and blending system is product of The Young Machinery Company, Dept. CP, Muncy, Pa. . . or for more information check CP 7145 on handy form located between pages two and three.)



500 lb movable dry powder mixing and blending system

The New Raymond

RAY-DUCER

WITH SCREEN SEPARATION

A Low-Cost Producer for pulverizing small lots of medium soft materials



LIFT COVER



TILT CARRIER



TAKE OUT SCREEN UNIT

THESE modern RAY-DUCER Mills represent a new and advanced design of hammer-type pulverizers — another addition to the Raymond line of fine grinding equipment.

They are especially designed for pulverizing or disintegrating a wide range of medium soft materials to specified screen fineness where moderate capacities are required.

Their high-speed hammer action reduces the material rapidly to a uniform powdered product at exceptionally low cost and insures a consistent finished material suitable for special chemical and manufacturing processes.

Raymond RAY-DUCERS offer many advanced features, as well as new ease of control, simplicity of operation, and quick accessibility of interior parts.

Only a few seconds are required to open up the mill for quick cleaning or changing screens. This saves valuable time in setting up jobs, or handling different materials with frequent changes between runs.

If you have a small capacity grinding problem, the RAY-DUCER may be an economical solution . . . write for details and tell us your requirements.

For Details
write for
Bulletin
Number 73



COMBUSTION ENGINEERING, INC.

1317 NORTH BRANCH ST.
CHICAGO 22, ILLINOIS

Raymond Division

SALES OFFICES IN
PRINCIPAL CITIES

When inquiring check CP 7146 on handy form, pgs. 2-3

7 Typical Emulsions and Dispersions *Improved by* Gaulin Homogenizers

LATEX THREAD — makes it smoother, more uniform . . . improves dip and extrusion characteristics.

LIQUID STARCH — Stops separation. Improves transparency and clarity.

PIGMENT DISPERSION — gives a finer, more uniform suspension with less temperature rise.

LUBRICATING OIL — improves lubricating value and stability. Increases service life.

CREAM OIL — Looks less greasy, feels less greasy . . . spreads quicker, holds better.

COSMETIC EMULSION — Has a smoother texture, longer shelf-life. Perfume is locked-in against evaporation.

WAXES — for uniform, stable emulsions and viscosity control.

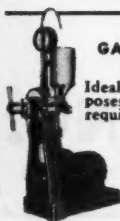


Warwick Division of Sun Chemical Co. uses this 500 GPH Gaulin to process its water repellent mixtures into uniform, stable emulsions.

And there are many more, each with its own set of reasons for using Gaulin Homogenizers. But there's one they all agree on — Gaulin Homogenizers are a **FASTER, MORE ECONOMICAL**

way to make uniform and stable emulsions or dispersions.

Why not investigate today. Complete testing facilities and engineering advice are yours without obligation.



GAULIN PILOT PLANT HOMOGENIZER

Ideal for experimental purposes, operation or process requiring up to 25 gallons per hour capacity. Handles quantities as small as one pint. Available on low rental basis.



GAULIN TWO-STAGE COLLOID MILL

Stator is jacketed for cooling or heating. Gap setting adjustable for .001" to .045". Only 45 seconds clean-up required in changing colors. 12" head room. 12" x 17" floor area.

Manton-Gaulin
MANUFACTURING COMPANY, INC.

55 GARDEN STREET, EVERETT 49, MASS.

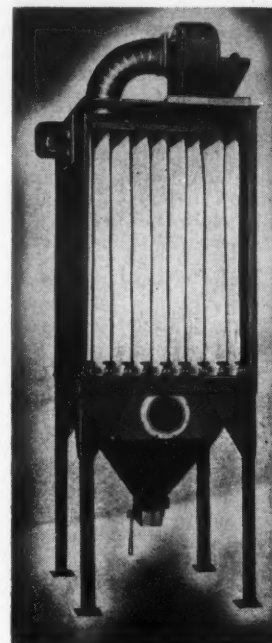
World's largest manufacturer of Homogenizers,
Triplex Stainless-Steel High Pressure Pumps,
and Colloid Mills

When inquiring check CP 7147 on handy form, pgs. 2-3

PROCESSING

**Set it up as it comes —
unit dust collector
ready to operate . . .**

bag units for inside use are in 7 sizes, from 200 to 1000 sq ft of filter area



Unit collector

Uses: Dust collector is designed for indoor use where air volumes are small. Finely divided dusts such as carbon black, cork, fine wood, graphite, pigments, lime, lamp black, soap, fine tobacco, and metal oxides are examples of specific applications.

Features: Collector is self-contained and is shipped assembled, ready for installation.

Description: Seven sizes are available, ranging from 200 to 1000 sq ft of cloth area. The larger sizes have two hoppers but only one air inlet and settling chamber. Bags are heavy, sateen-weave cotton filter fabric. They

can be shaken periodically through an eccentric arm operated by gear and pinion from fractional-hp motor mounted on outside of housing.

(Type CN cloth bag collector is a development of Pangborn Corporation, Dept. CP, Hagerstown, Md. . . . or for more information check CP 7148 on handy form, pages 2 and 3.)

Eight-page bulletin tells about packaged adsorption dryers

Packaged dryers using adsorbents for reducing moisture content of compressed air or other gases are fully described in eight-page bulletin. Photographs show the five types being offered. Various sizes of each are available. How to select proper size is shown by sample calculation and charts.

Flow diagrams illustrate how moisture adsorbed from gas being dried is removed by a reactivation gas stream. Drying process, adsorbents, and reactivation are discussed.

A listing of applications and companies using equipment is given.

Bul 16.0.081 is issued by Equipment Division, J. F. Pritchard and Company, Dept. CP, 210 West 10th Street, Kansas City 5, Mo. When inquiring specify CP 7149, pages 2 and 3.

PROCESSING

**Paper having 9" trim
is made by lab-size
paper machine . . .**

quality compares to that
from full-scale Fourdrinier

Uses: For experimenting with
new and improved paper, without
interfering with full-size machine
production.

Features: Paper machine pro-
duces paper with only a 9" trim.
Quality of paper is said to be
comparable to that from full-size
Fourdrinier machine. Small unit
operates at same pressures and
temperatures as large machine.

Description: Midget Fourdrinier
paper machine runs at speeds up to
8 fpm and produces up to 35 lb
of paper per hr. It requires only
one operator. Power consumption
is 2.5 kw.

Overall dimensions are 10'6" long,
2'8" wide, and 4'6" high.

(Paper machine is a product of
Parsons & Whittemore, Inc., Dept.
CP, 250 Park Ave., New York 17,
N. Y. . . or for more information
about manufacturer's product, reader
may simply check CP 7150 on
convenient Reader Service slip
located between pages two and
three.)

Operation of precipitator shown and explained

Applications, principles of operation,
design features, advantages, recommendations,
flow diagrams, and specifications of
liquid precipitator are described in
20-page booklet. Units come
in three basic designs and offer
means of removing impurities
from liquids by precipitation,
adsorption, settling, and filtration.

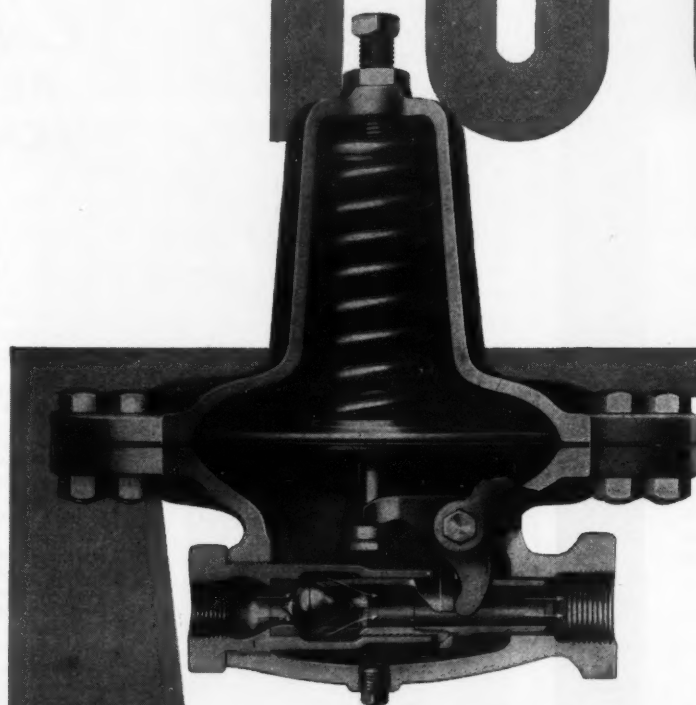
Bul 2204B is issued by The
Permutit Company, Dept. CP,
330 West 42nd Street, New
York 36, N. Y. When inquiring
about manufacturer's product,
reader may simply specify
CP 7151 on convenient Reader
Service slip located between
pages two and three.

For more information on product
at right, specify CP 7152
... see information request
blank between pages 2 - 3.

TYPE

1000

VALVE



Any product of quality should be dependable when ordinary products fail. Sudden pressure fluctuations, dirt, scale and viscous matter prove "fatal" to ordinary pressure reducing valves.

The CASH STANDARD TYPE 1000 VALVE however, is designed to operate with complete dependability under the

most difficult and unusual circumstances. Many of these units have been in service over 10 years and have never been taken "out of the line."

Truly an EXTRAORDINARY achievement of quality and design excellence.

INSTALL CASH STANDARD "TYPE 1000" VALVES

CASH STANDARD

A. W. CASH COMPANY

DECATUR, ILLINOIS

FEED

CONTINUOUS SEPARATION

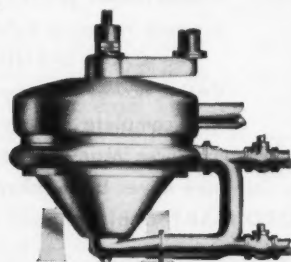
OF LIQUIDS AND SUSPENDED SOLIDS



The Merco Separator brings the modern, continuous flowplan to new phases of the chemical industry. It replaces bulky, batch-type operations, eliminating inherent slowness, contamination and fluctuations.

Versatile Merco Separators are economical replacements for conventional settling tanks, filters and centrifuges. In addition, Mercos handle micro-classification and washing of extremely fine particles—functions that cannot be economically duplicated by other means.

Merco continuous separation is based on a unique return flow principle. Clarified liquids and concentrated solids are separated and discharged without clogging, buildups, surges or retention of material. The action is entirely enclosed. All controls are external and simple.



Write today for descriptive bulletin C35 and application data.

MERCO CENTRIFUGAL CO.

AFFILIATE OF THE MERRILL COMPANY, ENGINEERS
150, GREEN STREET • SAN FRANCISCO • CALIFORNIA

When inquiring check CP 7153 on handy form, pgs. 2-3

PROCESSING

Storage tank kept full automatically by demineralizer . . .

high-purity water supply regulated by attached controls

Uses: Unit can be used wherever high-purity demineralized water is required.

Features: Demineralizer is equipped with special controls which automatically maintain the level of pure water in storage tanks.

Description: Units come equipped with automatic controls which operate as follows: after regeneration cycle has been completed and is in its final rinse stage, operator switches on controls. Effluent continues to run to drain until desired preset conductivity (purity) has been reached. At this point, high-purity water being produced starts to flow to storage tank, continues until tank is full.

When storage tank level falls to a predetermined level, demineralizer starts delivering again until tank has been refilled. Should purity drop during refilling process, water from unit will automatically run to drain. If proper purity is not attained within 27 min, unit will stop.

Demineralizer regeneration is done by customary "ion-exchange-in-reverse" process. Cation resins are washed with an acid solution, while anion resins are washed with a caustic solution.

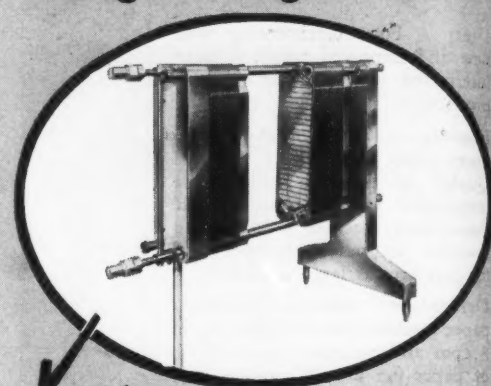
(Automatically controlled demineralizer is product of Penfield Manufacturing Company, Inc., Dept. CP, 19 High School Avenue, Meriden, Conn. . . . check CP 7154, pages 2 and 3.)

Fume removal unit described

Bulletin of four pages describes and illustrates movable washing tower for fume removal in plants and laboratories. Complete technical data, drawings, performance charts, and dimensional information are included.

Bul FW-3 is issued by Process Equipment Div., U.S. Stoneware Co., Dept. CP, 5300 Tallmadge Ave., Akron 9, Ohio. Specify CP 7155, pages 2 and 3.

For High Efficiency, Low-Cost Heating, Cooling and Regeneration...



Check THE NEW DE LAVAL PLATE HEAT EXCHANGER

There are an almost unlimited number of industrial process problems to which the new De Laval Plate Heat Exchanger provides the ideal answer. This is true because its basic engineering design, type of construction and operational characteristics give it many inherent advantages over other equipment offered for heating and cooling applications. Some of them are:

- 1 All heat-transmitting surfaces are accessible for inspection and cleaning.
- 2 Complies with sanitary requirements—designed for "in-place" cleaning.
- 3 Easy variation of assembly to meet changes in operation—plates are invertible (except Model P5).
- 4 Easy to assemble and disassemble—special design for precision tightening.
- 5 Small space requirements.
- 6 Unsurpassed efficiency of heat transmission.
- 7 All parts which contact the liquid are made of highest quality acid-resisting stainless steel.
- 8 Heater, cooler and regenerative sections may be assembled in one unit.
- 9 Several liquids can be heated or cooled simultaneously in different sections of the same Heat Exchanger.
- 10 Liquid cannot leak from one section to another and cannot become mixed with heating or cooling medium.
- 11 Sturdy construction for high-pressure operation.
- 12 Gaskets readily replaceable in user's plant.
- 13 Highest quality instrumentation by Taylor Instrument Company.
- 14 Wide range of sizes and capacities.

We would welcome an opportunity to provide detailed information on the De Laval Plate Heat Exchanger as applied to your particular problem.



DE LAVAL

THE DE LAVAL SEPARATOR COMPANY

GENERAL OFFICES—Poughkeepsie, N. Y.

427 Randolph St., Chicago 6

DE LAVAL PACIFIC CO., 61 Beale St., San Francisco 5

When inquiring check CP 7156 on handy form, pgs. 2-3

CHEMICAL PROCESSING

Vibrating equipped heavy du

frame has b

Uses: available v ing, two d

Features: vide great duty serv reduced g screen pan

Description: brating so sizes: 4' 5' wide and 6' w



Redesign

Inner and are SKF.

Main fra 18" car 8" cross 6' screen inforced

Single-de punched of 2-dec The wir and 6' side clamping strip in posit metal fa

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PROCESSING

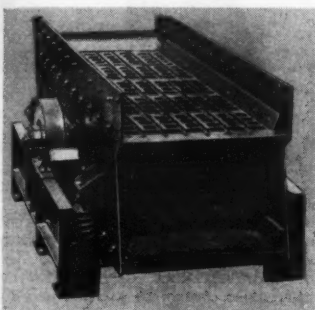
Vibrating screens equipped for heavy duty . . .

frames are heavier, vibration has been minimized

Uses: Vibrating screens are available with single deck for scalping, two decks for scalping, sizing.

Features: Redesigned to provide greater durability in heavy-duty service. Vibration has been reduced greatly without sacrificing screen pan action.

Description: Mesabi type vibrating screens are made in these sizes: 4' wide — 10 and 12' long; 5' wide — 10, 12, and 14' long; and 6' wide — 12 and 14' long.



Redesigned 4 x 10' scalping screen

Inner and outer bearings on all sizes are SKF.

Main frame on 4' screens has an 18" car channel reinforced with 8" cross beams, while the 5 and 6' screens include 18" I-beams reinforced with 8" cross beams.

Single-deck screens have $\frac{3}{4}$ " punched plate deck; both decks of 2-deck screens are wire mesh. The wire mesh screens in the 5 and 6' sizes are equipped with side clamp bars and center clamping strip to hold screen securely in position and further reduce metal fatigue failure.

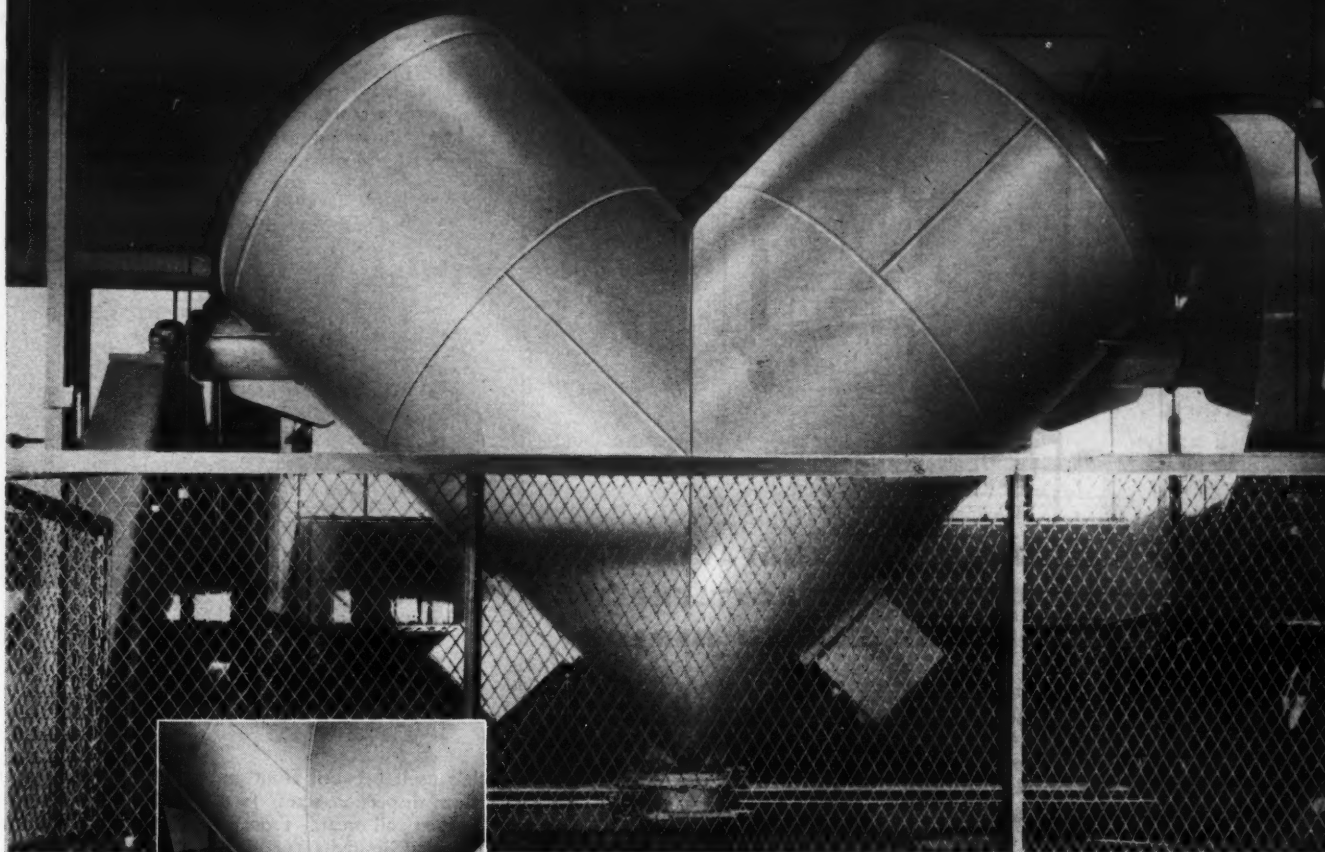
(Made by Pioneer Engineering Works, Inc., Division of Poor & Company, Dept. CP, Minneapolis 13, Minn. . . . check CP 7157, pages 2 and 3.)

For more information on product at right, specify CP 7158 . . . see information request blank between pages 2 - 3.

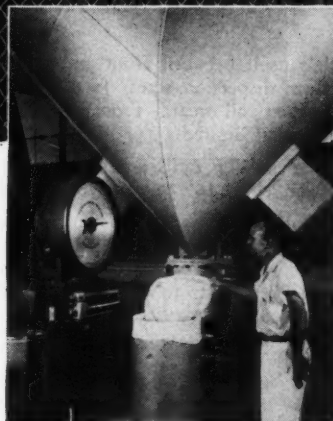


HOFFMANN-LA ROCHE, INC.

blends a 3-ton dose of vitamins



150 cubic ft. p-k blender of stainless steel-clad construction is charged through opening in floor above.



Shown is ease of discharge of p-k blender.

Hoffmann-LaRoche, Inc., Nutley, N. J., leading pharmaceutical manufacturers, find blending a three-ton dose of vitamins in one batch an easy matter with a p-k twin shell dry blender.

And, at the same time, the patented p-k blender provides perfect dispersion of the ingredients, as uniformly as a druggist compounds a single prescription.

The 150 cubic foot p-k blender shown here is at work every day in the modern Hoffmann-LaRoche plant at Nutley, N. J. Five different particle sizes are perfectly blended in 6600-lb. batches in this p-k blender. Clinical cleaning is easy, because of the wide openings of the p-k blender.

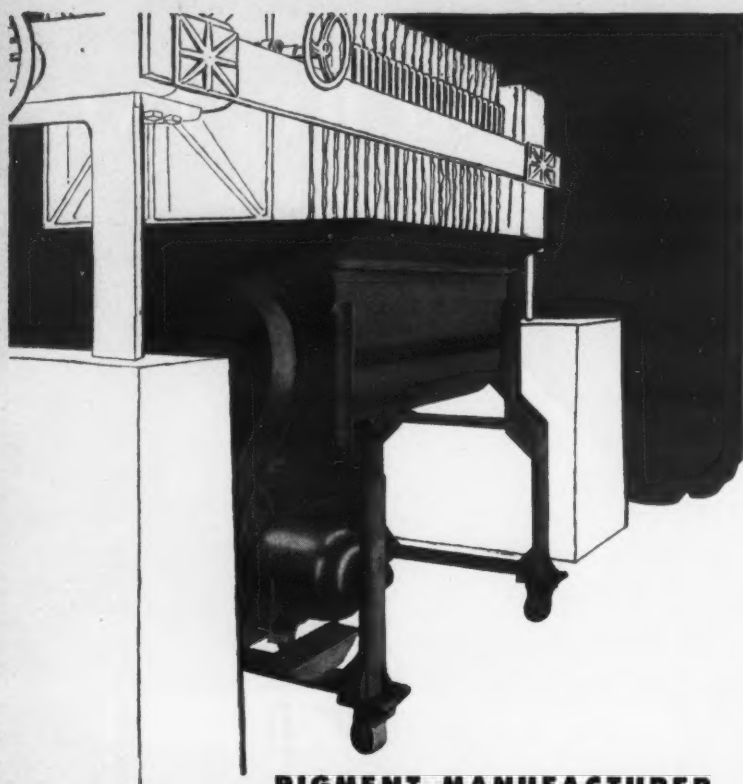
If your blending needs a shot in the arm, write today for complete information on sizes and capacities.



the **Patterson-Kelley Co., inc.**

730 Lackawanna Avenue, East Stroudsburg, Penna.

101 Park Avenue, New York 17 • Railway Exchange Building, Chicago 4 • 1700 Walnut Street, Philadelphia 3 • 96-A Huntington Avenue, Boston 16 • and other principal cities.



PIGMENT MANUFACTURER BREAKS PRODUCTION BOTTLENECK WITH READCO MIXERS

A large producer of water soluble paint pigments faced a problem confronting many management men...how to get more production—in a hurry.

In an analysis of his process, a bottleneck was found. Pigment solids were being removed from the emulsion in filter presses. Unmanageable filter cake was being scraped from the presses and shoveled into drums, a costly, time-consuming process.

A series of laboratory tests pointed out the simple solution. A battery of Readco Spiral Ribbon Mixers was installed beneath the presses. These mixers reduce the cake into a homogeneous, semi-liquid mass, ready for shipment. Processing time and costs have been greatly reduced.

You can approach your production problems in the same way. The Read Standard Corporation not only manufactures a broad line of chemical processing equipment, it offers you the services of its engineering specialists and laboratory facilities to assist you in the solution of your special processing problem.

READ STANDARD
CORPORATION

BAKERY-CHEMICAL DIVISION, York, Pennsylvania—Los Angeles 39, California

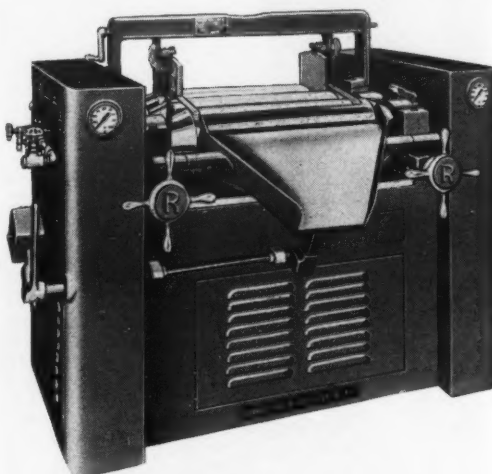
When inquiring check CP 7159 on handy form, pgs. 2-3

PROCESSING

**Reproducing process conditions
on 3-roll mill made easy with
pressure gages . . .**

hydraulic roll adjustment makes permanent accuracy possible

Used for grinding or dispersion, three-roll mill features a complete hydraulic adjustment of rolls for permanent accuracy. Roll settings on hydraulic pressure gages can be recorded for reproducing same material on repetitive runs. Operator turns two handwheels at front of mill until required pressure reading shows on gages. Back roll is moved hydraulically. Front roll is fixed. Middle roll paral-



Hydraulic pressure gages show roll settings on three-roll mill

els itself between front and back rolls, giving uniform dispersion across face of rolls and preventing uneven roll wear. Front roll can be quickly disengaged if desired.

The #52TF mills are available in six sizes ranging from 4½ x 10" to 16 x 40" inclusive.

(Roll mill is a development of Charles Ross & Son Company, Dept. CP, 148-156 Classon Ave., Brooklyn 5, N. Y. . . or for more information check CP 7160 on handy form, pages 2 and 3.)

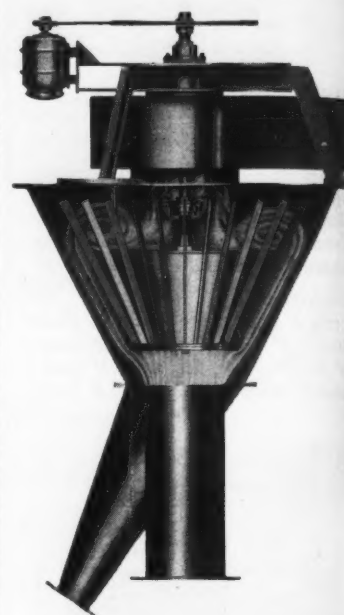
**Air-sealed stuffing boxes
protect product, bearings
in redesigned mixer . . .**

clutchless dumping mechanism of unit is operated by simple push on button

Uses: Fast, thorough dispersion mixing. Typical applications include blending of heavy plastics and colors into paints and inks; sludge reclamation in paints and enamels.

Features: Redesigned unit has air-seal type stuffing boxes in which four to ten-lb air pressure pro-

HARDINGE ANNOUNCES NEW "GYROTOR" AIR CLASSIFIER



Hardinge Company, Incorporated, York, Pennsylvania, announces a completely new type of dry classifier — the "Gyrotor" Air Classifier, designed for extremely close control of product in a dry grinding or separating operation. It can be used in closed circuit with a pulverizing mill or as a self-contained sizing unit for any moving stream of air-solids mixture.

The classifier is basically an inverted, truncated-cone shell with a motor-driven, bladed rotor of similar shape revolving on a vertical center axis inside the outer shell. The raw mixture of coarse and fine air-borne material is fed in from the bottom of the cone, passes upward in the annular space occupied by the whirling blades, describes a doughnut-shaped motion above the rotor, and discharges through a central opening in the top. Oversize not removed by the impact of the blades drops out in the eddy current above the rotor and centrifugal action deposits it on the outer shell of the classifier, where it slides to the oversize discharge at the base of the shell. The returning oversize is definitely cleaned of fines due to the winnowing action of the rotor blades in the annular space.

The classifier has a wide range of fineness control, and adjustment of product size is made simply by changing the rotor speed.

Hardinge Bulletin AH-449-13 describes this new classifier in detail.

HARDINGE
COMPANY, INCORPORATED

YORK, PENNSYLVANIA • 248 Arch St. • Made Oiler and Water

New York • Toronto • Chicago • Milwaukee • Houston • Salt Lake City • San Francisco

When inquiring check CP 7161 on handy form, pgs. 2-3

CHEMICAL PROCESSING

tests produc
guards bear
Carbon dio
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Another ch
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Description



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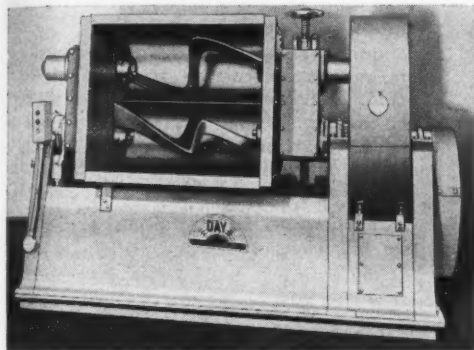
MARCH,

PROCESSING

protects product against contamination by lubricants and guards bearings from damage by abrasive mixtures. Carbon dioxide may be substituted for air, or space can be packed with grease.

Another change is the pushbutton-operated dumping mechanism in which old-style clutches have been eliminated.

Description: Imperial mixers are supplied in five



Redesigned dispersion mixer

sizes from 30 to 250 gal working capacity. Agitators are driven by 900-rpm motor. Standard tanks have 1/4" sheet steel walls; jacketed tanks, for steam pressures to 125 psi, have 5/16" walls.

Extra rigidity is provided by use of heavy ribbed castings as tie bars. Bearings are heavy-duty, barium bronze, self-lubricated. Non-weaving bearing supports are heavy ribbed castings borne on pedestal type supports connected directly to sub-base.

(Product of The J. H. Day Company Incorporated, Dept. CP, 1144 Harrison Ave., Cincinnati 22, Ohio ... or for more information check CP 7162 on handy form, pages 2 and 3.)

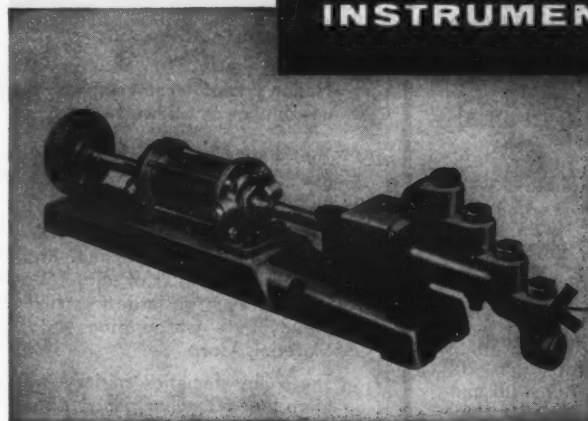
Explains principles, methods of freeze-drying

Process of drying by sublimation under controlled vacuum conditions — or "freeze-drying" as applied to preservation of food, preparation of pharmaceuticals and biologicals, and preservation of blood plasma, human tissues, serums and vaccines is explained in illustrated 24-page brochure.

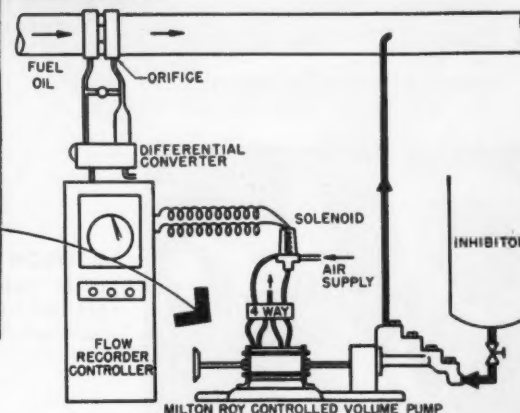
Principles, methods, and benefits as well as many typical problems solved by freeze-drying are described in detail. Equipment developed for large-scale processing, including units freezing by dry ice or Freon condensation, and drying either by steam or electric heating or by chemical desiccant are also covered.

Cat 735 is issued by F. J. Stokes Machine Co., Dept. CP, 5500 Tabor Rd., Philadelphia 20, Pa. When inquiring about manufacturer's product, reader may simply specify CP 7163 on convenient Reader Service slip located between pages two and three.

CONTROLLED VOLUME PUMPS ARE FLOW-CONTROL INSTRUMENTS



The heart of the system ... a Milton Roy "aiROYmetric" Controlled Volume Pump, Model AC. This metering instrument, a simplified design of larger "aiROYmetric" units, has a maximum capacity range from .04 to 37 gallons per hour against pressures to 6000 pounds per square inch. Capacity can be varied from 0% to 100% during operation.



A Milton Roy Proportional Feed System controls addition of inhibitor to fuel oil. A differential pressure transmitter sends an air signal, to the controller, in proportion to oil flow rate. The controller emits electrical impulses in proportion to flow, to pace the pump. Changes in additive to fuel ratio are made while the system is in operation.

HERE'S HOW THEY SOLVE ANOTHER LOW-CAPACITY FLOW CONTROL PROBLEM

Controlled Volume Pumps are the simple and economical solution to many flow control problems. These include: metering and pumping of small quantities of chemicals and slurries ... accurate rationing of two or more chemical streams ... precise automatic control of process variables, such as pH. In these applications Controlled Volume Pumps are final control elements.

Typical refinery applications include sampling and desalting of crude oil, metering additives to gasoline for octane appreciation, and automatic pH control of cooling tower water.

Solve your low-capacity flow control problems. Sizing of equipment, proper instrumentation, panelboard design and construction, and all other engineering details are part of the complete engineering service available to you from Milton Roy, at no extra cost.



Bulletin 1053, "Air-Powered Controlled Volume Pumps," and Technical Paper 62, "Controlled Volume Pumps in the Petroleum Industry" give you complete information. Send for your free copies.

**MILTON
Roy
COMPANY**

1354 E. MERMAID LANE • PHILA. 18, PA.

Manufacturing Engineers

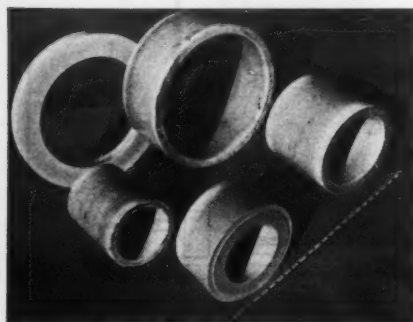
CONTROLLED VOLUME PUMPS AND AUTOMATIC CHEMICAL FEED SYSTEMS

Engineering representatives in the
United States, Canada, Mexico, Europe,
Asia, South America and Africa.

When inquiring check CP 7164 on handy form, pgs. 2-3

"TEFLON" CUSTOM SHAPES molded by Dore'

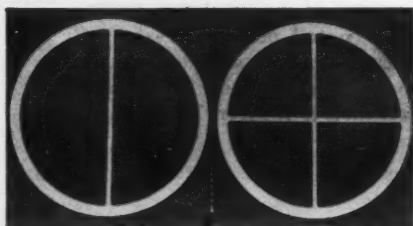
As the result of additions to our facilities we can now manufacture larger TEFLON tube stock and extruded rods; also larger gaskets of TEFLON, in an almost unlimited range of sizes.



TEFLON Tube Stock
can be molded up to 20" O.D. and any I.D. with minimum wall thickness of 1".



TEFLON Extruded Rods
up to 3" in diameter and 24" long are available. Rods of greater diameter and length can be extruded on special order.



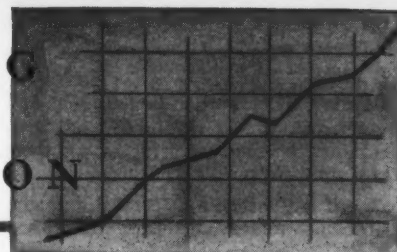
TEFLON Gaskets,
precision made to accurate dimensions, can be molded to any size — diameter and flange width — with or without ribs.

John L. Dore', Co.

SALES AGENTS IN U. S. A. FOR JOHN L. DORE', INC.
MOLDERS OF "TEFLON" AND "KEL-F" SHAPES
P. O. BOX 7772 • HOUSTON 7, TEXAS

When inquiring check CP 7165 on handy form, pgs. 2-3

EXPANDING CHEMICAL PRODUCTION



Nation's third largest asphalt plant now on line in Midwest

The nation's third largest independent asphalt refinery went on line earlier this month at Hammond, Indiana.

Constructed on a 150-acre tract, the new plant, the Allby Asphalt and Refining Corp., is the result of joint cooperation of the country's two largest asphalt refineries, the Byerlyte Corporation and the Allied Materials Corp.

The Allby facilities initially will produce more than 50 million gal of asphalt annually and will have an immediate storage capacity of eight million gal.

Plan doubling capacity for butyl phenol

Bakelite Company, a division of Union Carbide and Carbon Corp., has announced doubling of butyl phenol production capacity.

\$4 million plant will provide material to boost synthetic fiber output

Construction of a \$4 million plant for manufacture of DMT (dimethyl terephthalate), basic chemical used in manufacture of synthetic fibers, has been announced by the Hercules Powder company.

The new plant will be built on the site of present Hercules synthetic resins facilities at Burlington, N. J. and will be the first to manufacture DMT using a new air oxidation process. Plant is expected to be in operation in May, 1955.

Construct \$800,000 research center for oils, fatty acids, plastics

Emery Industries, Inc., is now constructing an \$800,000 research center adjacent to its Cincinnati, Ohio plant. The new building will provide new and larger quarters for the company's basic research, development, and chemical engineering.

Laboratory equipment is designed to evaluate on a plant scale all of Emery's fatty acids, plasticizers, and textile oils in such end-use applications as plastics, rubber, textiles, soap and detergents, cosmetics, molded products, alkyd resins, lube oils and greases, and metal working oils.

Completion of construction is expected late this year.

Add more research facilities for study of plastics

Construction is underway on a major addition to research laboratories at the Texas City, Texas plant of Monsanto Chemical Company's Plastics Division. Sixteen laboratories equipped for research in the fields of physical and organic chemistry and instrumentation will be included in one wing of the 12,440 sq ft, air-conditioned building.

Paper company forms division for polychemicals

West Virginia Pulp and Paper Company is now operating its newly-formed Polychemicals Div. at Charleston, S. C.

Activities of the new division embrace all phases of lignin operations, including production, product and uses development, sales and administration.

Plan research center on 90 acres for rubber, plastics

United States Rubber Co. has acquired options for purchase of a 90-acre tract of land in Preakness, Wayne Township, N. J., on which the firm plans a new research center for further exploring the fields of rubber, plastics, chemicals, and textiles.

The new research center calls for an expenditure of approximately \$4 million and will eventually replace the company's present research and development activities which will be transferred from Passaic, New Jersey.

EXPANDING CHEMICAL PRODUCTION

New sulfur mine now producing, expect 500,000 tons annually

Sulfur began flowing recently from the Freeport Sulphur Company's new mine, reported to be the largest single sulfur mining development in the world since 1933, on the toe of the Mississippi delta. At peak operation the mine is expected to yield 500,000 long tons annually from its Garden Island Bay location.

Make preliminary plans for lab to aid in glass research

Pittsburgh Plate and Glass Company has announced the purchase of a 45-acre tract in Hamar Township, near Pittsburgh, for location of a new glass research laboratory.

Anhydrous ammonia starts flowing from \$10 million plant

Anhydrous ammonia has begun flowing from the new \$10 million plant of Shell Chemical Corp. at Ventura, Calif. The plant will have a productive capacity of 150 tons daily.

Shell is also building a new plant at Norco, La., for production of allyl chloride glycerine, and chlorohydrins. Expected to be completed late this year, the new facilities will increase the firm's glycerine output by 25 million lb annually.

Boost ammonia, methanol output from southern plant

Commercial Solvents Corp. is now producing more than 70,000 additional tons of ammonia and 15 million additional gal of methanol annually from its recently-opened facilities at Sterlington, La.

Costing more than \$20 million, the facilities will double firm's production of those two basic chemicals. Current production of 30 million gal of methanol makes the company one of the world's largest producers of the chemical.

Chlorine-caustic soda plant on line, chlorinated methane products next

Start-up of chlorine-caustic soda operations at the new Perkins Plant of the Solvay Process Division, Allied Chemical & Dye Corp., Moundsville, W. Va., has been announced.

A plant for production of chlorinated methane products now being built by Solvay at Moundsville is scheduled for operation during the summer of this year.

Reorganize chemicals division — two separate names

Westvaco Chemical Div., Food Machinery and Chemical Corp., New York, has been reorganized early this year into separate divisions to be known respectively as Westvaco Chloro-Alkali Div., Food Machinery and Chemical Corp., and Westvaco Mineral Products Div., Food Machinery and Chemical Corp.

Dow opens new research center in Texas, cost \$2.6 million

Dow Chemical Company's Texas Division has formally opened its \$2.6 million research center at Freeport, Texas.

In its 69,000 sq ft of space, the new facilities will house the division's organic, chemical engineering and electrochemical research as well as the analytical laboratory, patent office, and a library.

First phenol plant on West Coast now in full production

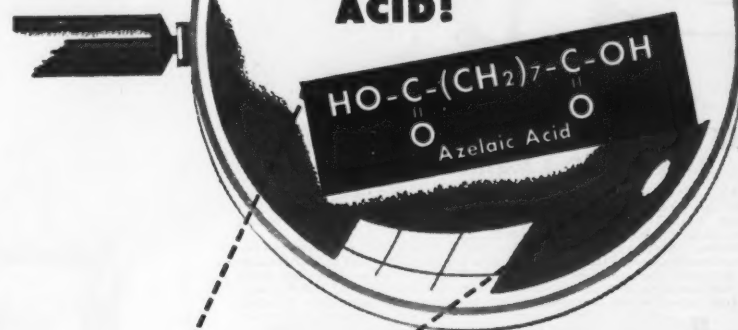
Monsanto Chemical Company's phenol plant at Avon, Calif., reported to be the first such plant on the West Coast, has started full production.

The plant is situated on a 412-acre site which also contains the company's 240-ton sulfuric acid plant, jointly operated with Tidewater Associated Oil Company.

LOOK

at this unique

**EMEROX®
DIBASIC
ACID!**



**...from Emery's New
Ozone-Oxidation Plant**

This new source of dibasic acid may be the answer to one of your tough problems . . . or it may be just the right chemical intermediate for that unusual application you've been thinking about.

Already it has unlimited potential use in plasticizers, alkyd resins, polyesters, polyamides, and synthetic lubricants. Further utilization as an economic replacement for higher-priced dibasic acids is also unlimited.

Take a look at the typical characteristics and composition of EMEROX 1110 Azelaic Acid:

Acid Value	560
Combining Weight	100
Melting Point	95-99° C
Color, F. A. C.	7
Specific Gravity @ 110° C	1.038
Azelaic Acid Content (C ₉)	87%
Other Dibasic Acids	13%

As a result of Emery's revolutionary ozone-oxidation process, EMEROX 1110 Azelaic acid is now available in commercial quantities.

Check this unique dibasic acid
today — send for samples —
mail coupon for literature!

Emery

Fatty Acids & Derivatives
Plastolein Plasticizers
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Emery Industries, Inc., Carow Tower, Cincinnati, Ohio
New York • Philadelphia • Lowell, Mass. • Chicago • San Francisco
Warehouse stocks also in St. Louis, Buffalo, Baltimore and Los Angeles
EXPORT: 5035 RCA Bldg., New York 20, New York

EMERY INDUSTRIES, INC.
Dept. CP-3, Carow Tower
Cincinnati 2, Ohio

Please send me literature on
Emerox 1110 Azelaic Acid.

Name _____ Title _____
Company _____
Address _____
City _____ Zone _____ State _____

When inquiring check CP 7166 on handy form, pgs. 2-3



THE ULTIMATE IN WASH FIXTURES Bradleys Cut Maintenance, Too!

Bradley DUO-Washfountains with Foot-Control stop contagious basin and faucet contacts—guard against dermatitis and spread of germs. Each DUO serves two persons simultaneously. Hands touch only clean, tempered running water.

Bradley Sprayhead has no moving parts, no packing or washers—replaces four faucets. Piping connections are cut 50%. One DUO replaces two ordinary basins. Faucet repairs are eliminated, and janitor work cut. Self flushing bowl prevents collection of contaminated water. Foot-Control cuts off water instantly as foot is removed from treadle. Bradley DUOs are available with white or green vitreous enamel finish, or in Stainless Steel.



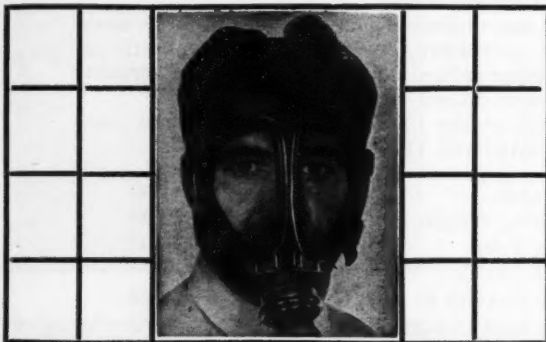
FOOT-CONTROL

BRADLEY WASHFOUNTAIN CO.
2231 W. Michigan Street Milwaukee 1, Wisconsin
Write for Bulletin K-958

BRADLEY
Duo Washfountains

Distributed through Plumbing Wholesalers

When inquiring check CP 7167 on handy form, pgs. 2-3



ACME, the Only Gas Mask With the "PICTURE WINDOWS"

You never have that "jammed-in" feeling, wearing the Acme Full-Vision Gas Mask. Its patented, larger lenses are like picture windows, giving you full natural vision for that safe, unconfined feeling. When you walk, you can actually see your toes without bobbing your head. This factor alone makes Acme outstanding among gas masks . . . well worth looking into.

Write for the complete story on Acme Gas Masks for the chemical industry.

ACME PROTECTION EQUIPMENT CO.
3037 West Lake Street, Chicago 12, Illinois

When inquiring check CP 7168 on handy form, pgs. 2-3

safety



Fire-retardancy of "clip-on" roof construction (left) is dramatically demonstrated. Photo highlights contrast after five minutes — conventional roof is consumed by flames; "clip-on" roof smokes slightly

FIRE TEST shows advantages of "clip-on" roof

Designed to prevent drippage of flammable asphalt or tar, eliminate all combustible materials between roof deck and insulation

To demonstrate fire-retardant qualities of "clip-on" roof construction, its developers recently subjected two specially built test roofs to conditions comparable to a highly destructive plant fire. One roof was of conventional construction while the other incorporated several special construction features.

Intensely hot, kerosene-fed flames were ignited simultaneously under the roofs. After five minutes the conventional roof had been consumed by flames while the other was only smoking slightly. After nine minutes conventional roof collapsed, and the dripping of molten asphalt and tar into fire produced characteristic dense black smoke. The "clip-on" roof, except for minor melting of tar and charring, remained standing and intact throughout test. This publicly-witnessed test graphically demonstrated the greater fire-resistant qualities of "clip-on" roof construction.

Conventional roofing (see Fig 1) usually consists of:

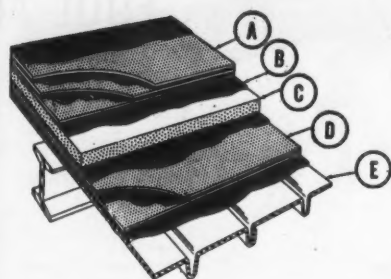


Fig 1—Conventional roof construction with 2-ply liner sheet

- A) Built-up roof, alternate layers of bitumen and felt
- B) Mopping of bitumen
- C) Insulation embedded in mopping of asphalt
- D) Liner sheet — 2 plies of asphalt and felt
- E) Steel deck

Roof insulation, set in mopping of hot asphalt or tar and vapor barriers, consists of two plies of asphalt or tar-saturated roofing felts. By removing these readily burnable materials (B and D in Fig 1) two hazardous factors are eliminated.

To accomplish this, developers of the new roof (Fig 2) make use of a specially designed insulation clip (C) and a non-combustible vapor seal (E).

The clip is a one-piece, heat-treated alloy steel fastener which readily pierces metal decking up to 18 gage.

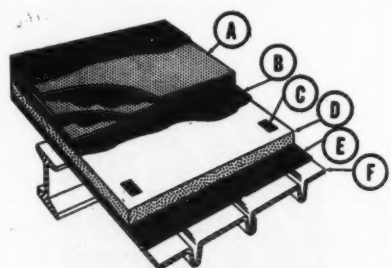
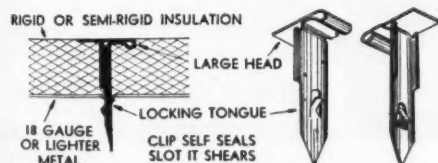


Fig 2—"Clip-on" roof construction

It fastens rigid or semi-rigid insulation to steel decks simply and securely regardless of pitch or position of surface. When clips are driven in place by an ordinary hammer, locking tongue snaps into place on underside of metal to assure permanent fastening. When used with Fiberglas or corkboard roof insulation, which give certain degree of compressibility,

(Continued on page 137)



For every job in every industry...

U. S. INDUSTRIAL GLOVES



PROVEN BEST BY
WEAR TEST



STYLE
NO. 1375

U. S. ROYAL NEOPRENE COATED CANVAS WITH NYLON FINISH

Combines safety, comfort and economy with the amazing qualities of Neoprene. Neoprene withstands oils, acids and corrosive chemical solutions. Resists heat, sunlight and abrasion without softening or cracking. Resists cutting. Curved finger construction and flannel lining for extra comfort. Also available in other styles and constructions. Color—Black. One size only.



STYLE
NO. 1405

U. S. DURA-GRIP PLASTIC COATED CANVAS

Specially compounded vinyl coating gives these gloves super abrasion-resistant qualities. Curved finger construction, flannel lining for extra comfort. For handling cement blocks, lumber, metal bars and pipes, etc. Color—Yellow. One size only. Also available in other styles for different uses.



STYLE
NO. 129

U. S. GRIP-SURE

Made of pure natural rubber latex. Ideal for canning and other light industrial uses. Highly resistant to most fruit and vegetable acids. Tough, yet extremely flexible. Specially designed pattern on fingers and palm for extra gripping qualities. Sizes 7 to 10 including half sizes.



STYLE NO. 102
LIGHT WEIGHT



STYLE NO. 1398
HEAVY WEIGHT

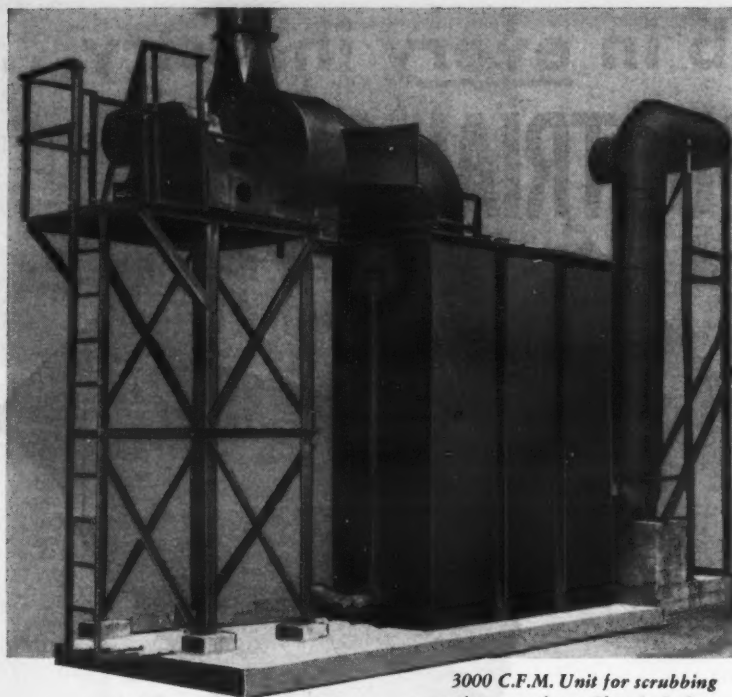
U. S. INDUSTRIAL NEOPRENE UNLINED GLOVES

Made of specially compounded Neoprene to withstand oils, acids and other corrosive chemical solutions. Made with curved fingers. Extra roughened surface for positive grip. Scientifically developed to give utmost in safety, comfort, and economy. Also available in other styles.



UNITED STATES RUBBER COMPANY • Rockefeller Center, New York

When inquiring check CP 7169 on handy form, pgs. 2-3



3000 C.F.M. Unit for scrubbing corrosive gases from Chemical plant

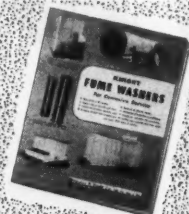
Another Corrosive Fume Problem Solved By KNIGHT FUME WASHERS

Knight Pyroflex Constructed Fume Washers have solved many difficult gas and fume elimination problems under extremely corrosive conditions.

The unit above, for example, was job engineered to handle corrosive fumes from a large chemical manufacturing plant. Initially Knight engineers considered all service factors involved including water consumption and fan power. Construction materials were selected according to corrosive factors involved. The result was a complete functional unit job-engineered to solve a specific problem in corrosive fume elimination. Although individually engineered Knight Fume Washers are relatively low in cost and economical in operation.

TYPICAL APPLICATIONS

- Absorption of HCl fumes
- Suppression of oil and acid mists
- Removal of pickling tank vapors
- Removal of dust from exhaust gas
- Removal of chlorine fumes
- Absorption of hydrofluoric acid fumes
- Cooling hot acid gases for processing
- Many other types of service



Write for Bulletin No. 9 Fume Washers.

Maurice A. Knight 403 Kelly Ave., Akron 6, Ohio
Acid and Alkali-proof Chemical Equipment

When inquiring check CP 7170 on handy form, pgs. 2-3

SAFETY

Adjustable fog gun sets spray pattern easily

Fog gun is adjustable from a soft conical fog to a hard driving jet. Adjustment is made by turning rubber gripped handle one-half turn. On-off control is obtained by means of trigger shut-off included with nozzle. Made with garden hose thread, it is said to be particularly effective against indoor



Handle controls spray

home and industrial fires. It may also be used for spraying insecticides and weed killers. It operates at pressures from 30 to 150 psi.

(H5G Fog Gun is a product of Bete Fog Nozzle Inc., Dept. CP, 309 Wells St., Greenfield, Mass. . . or for more information check CP 7171 on handy form, pages two and three.)

Locking mechanism keeps isotopes in bottle

Shielded carrier for handling radioactive isotopes used in medical or research laboratories has key-operated locking mechanism to prevent unauthorized personnel from handling the isotope. Bottle containing a radioactive isotope may be lowered into "well" of shield where it is fully surrounded by 1" of lead. Spring platform raises the bottle so that it may be easily lifted out of the "well" when the lock at top of shield is removed. Shield weighs 20 lb and may be moved by means of chrome plated handle. Overall dimensions are 3 1/2 x 6".

(Model 3035E is available from Nuclear-Chicago, Dept. CP, 223 West Erie St., Chicago 10, Ill. . . or for more information check CP 7172 on the convenient Reader Service slip located between pages 2 and 3.)



Drive out FOUL AIR Blow in FRESH AIR with Coppus Type A Ventilator

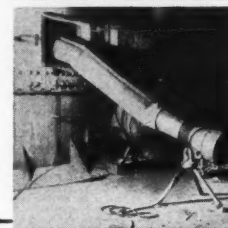
Assure greater safety, comfort for workers . . . get greater efficiency.

Drive out dangerous fumes, gases, stagnant or hot air from boilers, cable manholes, tanks, vats and other confined places. Supply fresh air continuously.

Send now for further information. Coppus Engineering Corporation, 383 Park Avenue, Worcester 2, Mass.

MANHOLES made safe for workers' entrance within minutes.

BOILER AND TANK INTERIORS cooled by Coppus. Fresh air supplied continuously.



When inquiring check CP 7173 on handy form, pgs. 2-3



For specifications and prices on the complete line of Ballymore Safety Step Ladders, send for free catalog. Ballymore Company, Wayne 10, Pa.



BALLYMORE SAFETY STEP LADDERS

When inquiring check CP 7174 on handy form, pgs. 2-3



Except for minor melting of tar and slight charring "clip-on" roof remains undamaged in fire test

(Continued from page 135)

clip will move with the insulation. If stepped on, clip will move vertically, preventing a damaging shearing of the felts.

If insulation is properly laid, it is unlikely that any significant amount of bitumen will seep through unless fire condition occurs where heat acts as a drawing agent on asphalt and tar above the insulation. To prevent this, specially compounded fire-retardant vinyl film manufactured by B. F. Goodrich Co., is used as liner sheet. Designated as "Lexsucor", this vapor seal is a tough, opaque, elastic material 4 mil thick and 300 yards long and is supplied in standard rolls weighing about 80 lb. Normally laid dry, with two inch cemented laps, sheet is fire-retardant in the sense that it won't support combustion. In event that there is sufficient heat and oxygen to char the vapor seal, it merely deteriorates instead of producing a combustible material as in the case of asphalt or tar.

From the standpoint of permanency, rigidity and elimination of bitumen drippage under normal and fire conditions, the Lexsucor roof seems to offer a substantial contribution to industrial plant safety.

(Roof is a development of Lexsucor, Inc., Dept. CP, 4815 Lexington Ave., Cleveland 5, Ohio . . . or for more information, reader may simply check CP 7175 on handy form, pages 2 and 3.)

Film illustrates safety factors using oxyacetylene torches

Sound slide-film treats factors affecting safety when operating oxyacetylene welding and cutting torches as well as cutting machines. Twenty-minute film is specifically designed for companies to train their own employees.

Free showing of "The Guy Behind Your Back" may be arranged by contacting Air Reduction Sales Co., Dept. CP, 60 E. 42nd St., New York 17, N. Y.



Handclasp of a friend-in-need

There's confidence in the very "feel" of the world famous C-O-TWO Squeeze-Grip Carbon Dioxide Type Fire Extinguishers. The quick-acting "Squeeze-Grip" fits your hand naturally like a handclasp...hangs right...carries right...works right. You're in complete command of the situation instantly...no fumbling...no fatigue.

From the non-conducting, shatterproof discharge horn to the high strength, durably finished cylinder, you get top quality construction that results in a lifetime of satisfactory service. Because of the very few working parts and corrosion resistant materials throughout, the total cost to you over the years is less than other initially lower priced makes...fire after fire, recharge after recharge, without trouble.

It's not hard to see, when you fully compare and try, why C-O-TWO Squeeze-Grip Carbon Dioxide Type Fire Extinguishers are your best buy for killing flammable liquid and electrical fires, as well as some surface fires involving ordinary combustible materials. Sizes range all the way from 2½ to 100 pounds capacity...all fully approved by the Underwriters' Laboratories, Inc., Factory Mutual Laboratories, Armed Forces and Government Bureaus.

With C-O-TWO Squeeze-Grip Carbon Dioxide Type Fire Extinguishers the penetrating carbon dioxide is a clean, dry, non-damaging, non-conducting, inert gas...smothers fire instantly, leaves no after fire mess...harmless to equipment, materials and finishes...even food is still perfectly edible.

Act now for complete free information on these first-rate, sure-acting fire extinguishers. Remember fire doesn't wait...get the facts today!

Act now for complete free information on these first-rate, sure-acting fire extinguishers. Remember fire doesn't wait...get the facts today!



MANUFACTURERS OF APPROVED FIRE PROTECTION EQUIPMENT

Squeeze-Grip Carbon Dioxide Type Fire Extinguishers
Dry Chemical Type Fire Extinguishers
Built-In High Pressure and Low Pressure Carbon Dioxide
Type Fire Extinguishing Systems
Built-In Smoke and Heat Fire Detecting Systems

C-O-TWO FIRE EQUIPMENT COMPANY NEWARK 1 • NEW JERSEY

C-O-TWO FIRE EQUIPMENT OF CANADA, LTD. • TORONTO 8 • ONTARIO

Sales and Service in the Principal Cities of United States and Canada

AFFILIATED WITH PYRENE MANUFACTURING COMPANY

When inquiring check CP 7176 on handy form, pgs. 2-3



There are many vital business assets which are not insurable under any conditions. In fact, some of them are not replaceable at any cost. Safeguarding life, property, equipment, customers, public confidence and profits is worth many times the cost of ENGINEERED "Automatic" Sprinkler FIRE PROTECTION. It's well to remember that what's worth insuring is worth protecting!



Get The Facts . . .
Send for FREE Literature Today!

"Automatic" Sprinkler Corp. of Amer
Dept. F Youngstown, Ohio
Please rush copy of Bulletin 66 -
"The ABC of Fire Protection"

Name _____
Title _____
Company _____
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City _____ State _____

Automatic
Sprinkler
CORPORATION OF AMERICA
YOUNGSTOWN, OHIO
Offices in principal cities of
North and South America

When inquiring check CP 7177 on handy form, pgs. 2-3

SAFETY

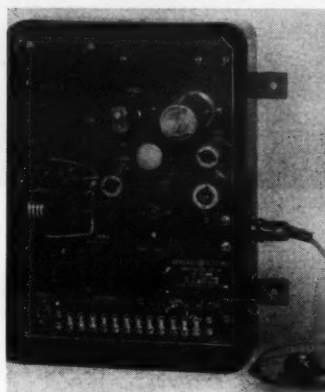
Warns when "shakes" get dangerous . . .

vibration relay intended for unattended rotating equipment

Uses: Protective device initiates alarm signal when vibration becomes excessive. It can be used to detect unbalance in large rotating equipment which operates unattended.

Features: Rating encompasses all usual situations: speeds from 300 to 18,000 rpm, vibration accelerations up to 20g.

Description: Since it is designed as a safety device, vibration relay features several safety precautions itself. It can be used where dust conditions exist, it is fail-safe, it



Unit is 1 3/8" high

can be recalibrated in the field from a self-produced signal. Fail-safe feature gives warning when filament burn-out, rectifier failure, fuse failure, or loss of line voltage stop operation.

Relay responds to an output signal of a barium titanate crystal accelerometer which is bolted to equipment being protected. Signal is amplified and rectified by bridge-type rectifier. DC output operates a sensitive SPDT relay whose contacts are available for operation of external alarm or shut-down device.

Output voltage of accelerometer sensing element is proportional to magnitude of the vibration. Vibration is sensed in a direction perpendicular to surface upon which sensing element is mounted. Mounting consists of a 3/8" #24 steel stud.

Calibration and adjustment for operations are made easy by a 1 volt

Hermetically-Sealed LIMIT SWITCH

Type H

Designed and used for Military Aircraft. NOW . . . available for general industry with the same QUALITY . . . the same precise SPECIFICATIONS . . . the same DEPENDABLE OPERATION in any environment!

GUARANTEED OPERATION in dusty, dirty locations, in intense heat (+250 deg.) or extreme cold (-100 deg.) Tipping action of the actuator insures positive, dependable operation even when the switch is completely coated with ice making this switch adaptable for unlimited refrigeration or out-door uses.

This switch is truly the solution to any application where environment is a problem. It is light, compact and easily mounted with a variety of circuit arrangements, including DPDT. Extremely long mechanical and electrical life . . . rated at 10 amps 125/250 V. ac.

Sealed Protection Against:

- Moisture
- Oil
- Dust and Dirt
- Heat and Cold
- Corrosion

For complete details . . .
WRITE TODAY for Data sheet HM-3

ELECTRO-SNAP SWITCH AND MFG. CO.
4224 West Lake Street, Chicago 24, Illinois

When inquiring check CP 7178 on handy form, pgs. 2-3

USE THIS NEW SAFETY MATERIAL ALL OVER YOUR PLANT

Work platforms

Flooring

Gutter Covers

Partitions

GRIP-STRUT

Safety
GRIP-STRUT
NON-SKID—RUGGED—LOW COST

Safety Grip-Strut is a new basic material. All one piece, steel or aluminum, in various sizes and gauges. Sold like lumber, used like lumber and stocked in your storeroom like lumber. Ideal for on-the-job fabricating. Not welded, riveted or expanded. It presents an open space, in a diamond shaped pattern, in excess of 75% of the area for ready access of light and air and gives a positive NON-SKID footing in all directions. Ideal for stair treads, fire escapes, cable trays, work platforms, catwalks, flooring and for original equipment safety treads. Your own mechanics can install it—it's inexpensive, yet permanent and safe.

Write today for new catalog showing loadings and methods of easy application in your plant.

Distributors in all principal cities.
GRIP-STRUT division
THE GLOBE COMPANY
Manufacturers since 1914
4606 S. Princeton Ave. • Chicago 9, Ill.

When inquiring check CP 7179 on handy form, pgs. 2-3

Obtain Better Lighting for the Seeing Task

EXPLOSIVE ATMOSPHERES with BENJAMIN EXPLOSION PROOF lighting units

If safety regulations, fire insurance or building code call for UL-approved Explosion-Proof lighting, you need not sacrifice proper lighting in order to meet these requirements. You need not handicap workers with poor light which does not fit their particular seeing task. You need not stand for production slowdown in such locations due to improper illumination. The wide variety of reflectors available with Benjamin Explosion-Proof units makes it possible to provide the cor-

rect light for every seeing task found in industrial explosive atmospheres. For utmost protection against depreciation and deterioration, each reflector is covered with "Life-Time" Porcelain Enamel fused to steel... the unsurpassed reflecting surface which resists the corroding effects of fumes, moisture and grime and is easily cleaned with soap and water. Free Bulletin EP contains complete Explosion-Proof lighting facts.

BENJAMIN ELECTRIC MFG. CO., Dept. LL, Des Plaines, Illinois 336



When inquiring check CP 7180 on handy form, pgs. 2-3

PROTECT EQUIPMENT against abnormal pressure increases with Edward RELIEF VALVES

Edward relief valves protect equipment against sudden and unusual pressure increases in piping systems. Foolproof design and accurate spring action make them absolutely dependable. One low cost valve can save much expensive equipment.

Used extensively in power, chemical, process, petroleum, hydraulic, marine, and general industrial service, they are particularly suited for relieving pressure in pump lines, drums, heat exchangers, and unfired pressure vessels handling water, steam, oil, or vapor.

They need no packing, maintenance is negligible, and the fine pitch threads of the adjusting screw allow close regulation of pressure setting.

NEW BULLETIN

Write for new free bulletin No. 711 containing latest design details, dimensions, weights, and installation information.

Another Product

Edward Valves, Inc.

Subsidiary of ROCKWELL MANUFACTURING COMPANY

1230 West 144th Street, EAST CHICAGO, INDIANA

When inquiring check CP 7181 on handy form, pgs. 2-3

MARCH, 1954

SAFETY

rms calibration signal supplied by relay's regulator. Instrument is not affected by ambient temperature. Sensitivity control is calibrated from 0 to 20 which corresponds to a 0 to 2g peak vibration acceleration. A 10:1 attenuator in the amplifier input allows calibration to 20g peak. Response is usable at frequencies as low as 5 cycles/second.

Power requirements are 105/125 volts AC, 50/60 cps. Unit weighs 18 3/4 lb, and measures 9 1/8 x 13 1/8 x 6 1/4".

(Vibration relay is a development of Special Products Section, General Electric Co., Dept. CP, 1 River Road, Schenectady 5, N. Y. . . . or for more information check CP 7182 on handy form, pages 2 & 3.)

Glass fiber yarn used to make light-weight fire hose . . .

50-ft length forms coil only
24 inches in diameter

In addition to lightness and strength, fiber glass fire hose possesses compactability. It does not absorb water and is flexible at low temperatures. Because of



22,250 lb of truck hits hose under full pressure without damage

high strength imparted by glass fiber yarn, a hose of conventional outside diameter can be made with thinner wall, permitting a larger bore which will handle more gallons of water per minute.

(Hose is development of Boston Woven Hose & Rubber Co., Dept. CP, P.O. Box 1071, Boston 3, Mass. . . . or for more information check CP 7183 on handy form, pages 2 and 3.)

12 reasons why Scott AIR-PAK is your best breathing equipment buy!



1. Ready for use in less than one minute, just turn on the valve and it's ready to go.
2. Clear visibility, cool air prevents fogging.
3. Simple to use. No practice or complicated training. Anyone can use the Air-Pak with complete confidence.
4. Fresh, cool AIR — not oxygen, for 100% protection in all breathing hazards, even explosive petroleum vapors.
5. Free and easy breathing under all conditions. No breathing restraint even during extreme exertion.
6. Triple safe regulator design proven by hundreds of thousands of hours service.
7. Positive, constant check of available air supply with dependable gage. No timer, no guesswork.
8. Full-vision face mask with diaphragm exhalation valve permits conversation.
9. The AIR-PAK is all-purpose equipment, not just rescue apparatus.
10. Economical. Operates for as little as 50c per hour. There is no waste — air that is not used may be saved for next time.
11. The AIR-PAK is completely independent of surroundings — safe in any atmosphere, in any concentration. Can even be used under water!
12. Proven. Thousands in use by business, industry and the fire service.



WRITE TODAY FOR COMPLETE
INFORMATION!

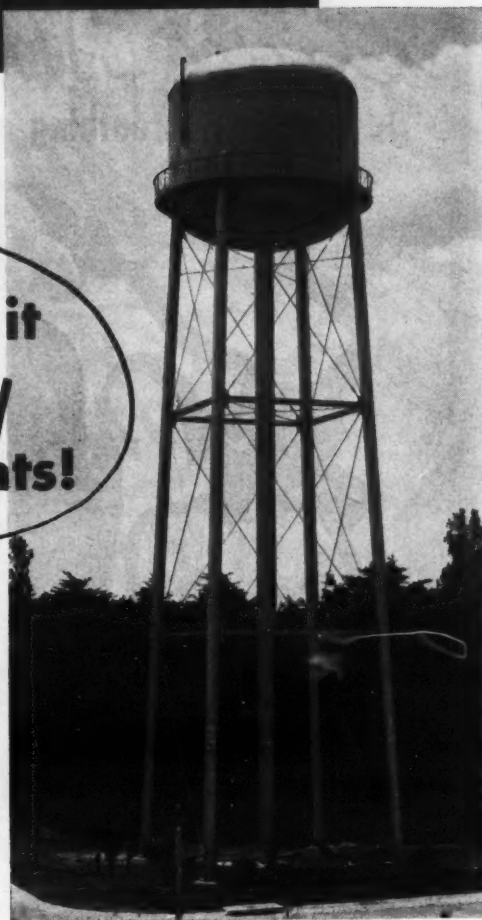
SAFETY EQUIPMENT DIVISION
SCOTT AVIATION CORP.
242 ERIE STREET LANCASTER, N. Y.

Canada: Safety Supply Co., Toronto — Branches in principal cities
Export: Southern Oxygen Co., 15 West 57th Street, New York 19, New York

When inquiring check CP 7184 on handy form, pgs. 2-3

FIRE protection

when it
really
counts!



● A sprinkler system provides fine fire protection for a plant. But . . . it's useless if water isn't ready to flow the instant a sprinkler head opens.

A Horton® elevated tank, such as the 125,000-gal. Horton ellipsoidal-bottom structure shown above, assures you of a supply of water that is ready to flow any moment of the day or night. In case of fire, one or more sprinkler heads open and water, under dependable gravity pressure, flows instantly to quench the flames. Such a system will often help pay for itself in reduced insurance premiums.

Horton elevated tanks are built in capacities from 5,000 to 3,000,000 gals. Write our nearest office for information, estimates or quotations. There is no obligation on your part.

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Los Angeles 17 1536 General Petroleum Bldg.
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Pittsburgh 19 3208 Alcoa Bldg.
Salt Lake City 4 507 W. 17th South St.
San Francisco 4 1545—200 Bush St.
Seattle 1 1307 Henry Bldg.
Tulsa 3 1649 Hunt Bldg.

Plants at BIRMINGHAM, CHICAGO, SALT LAKE CITY, and GREENVILLE, PA.

When inquiring check CP 7185 on handy form, pgs. 2-3

SAFETY

Develop explosion-proof midget solenoid valves

Uses: For Class 1, Group D hazardous locations.

Features: Valves are very compact. Two-way measures 3 x 2-19/32" and Three-way is 3-5/8 x 2-19/32".

Description: Solenoid enclosures of valves are of cast iron, with 1/2" threaded conduit connections. Conduit boxes can be



Only 3" high

revolved 360°. Standard voltages for both two-way and three-way are 115 or 230v AC, 60 cy, and 115 v DC. Body material is of brass or stainless steel.

(Midget solenoid valves are a product of Automatic Switch Co., Dept. CP, 385-C Lakeside Ave., Orange, N. J. . . or for more information check CP 7186 on handy form, pages 2 and 3.

Single unit powers five flood lights

Uses: Furnishes emergency light whenever regular source of power fails.

Features: Correct rate of charge keeps battery properly maintained automatically.

Description: Unit comes equipped with two chrome-plated adjustable sealed beam flood heads. Will furnish automatic emergency lighting for approximately 12 hours. Unit will take up to 5 heads which can be placed wherever needed. It is powered by 6 v, 105 amp battery.

(Light Warden Chargomatic 88 is product of Electric Cord Co., Dept. CP, 195 William St., New York 38, N. Y. . . check CP 7187 on handy form, pages 2 and 3.)

INTERNATIONAL RECTIFIER CORPORATION

EL SEGUNDO CALIFORNIA

HERMETICALLY

SEALED RECTIFIERS

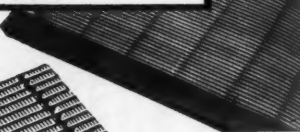
DIAMETER: From 3/16" to 1-1/2"
LENGTH: From 9/16" to 10"
CURRENT, half-wave: 1.5 ma to 60 ma
VOLTAGE, DC input: 20 volts to 4,000 volts

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When inquiring check CP 7188 on handy form, pgs. 2-3

Kleenslot THE IDEAL SCREEN FOR DEWATERING AND SIZING!



Cross section at left shows how KLEENSLLOT Screens operate on a non-clogging principle.

IT CAN BE ADAPTED TO FIT ANY MAKE OF VIBRATOR. It is not necessary to change your present machine to accommodate our screen.

KLEENSLLOT WEDGE WIRE VIBRATOR SCREENS are of quality construction and built to give maximum long-life service. The rigid construction and method of installation prevents "whipping".

The wedge shape of the screen wire with its non-clogging, non-blinding features permits perfect separation on wet or dry screening and the rigid construction adds considerable to its capacity and efficiency when used in vibrator applications.

Wedge-Wire CORPORATION

GAS ST. AT NICKEL PLATE R.R., WELLINGTON, OHIO

SEND FOR OUR ILLUSTRATED CATALOG

When inquiring check CP 7189 on handy form, pgs. 2-3

Displays steam, hot water safety devices

Condensed 4-page catalog of safety devices for steam and hot water boilers and hot water tanks gives information on low water cut-off, pump controls, boiler feeders and temperature relief valves. Service recommendation chart and details on use of safety water feeders on hot water boilers are included.

Bul C-54 is issued by McDonnell & Miller, Inc., Dept. CP, 3500 N. Spaulding Ave., Chicago 18, Ill. Specify CP 7190, pages 2 and 3.

Develop washable flat paint with fire extinguishers "built in" . . .

being made available to regional paint manufacturers on a licensing agreement

Announced is the development of an interior flat wall paint which combines economy of use with fire retardancy powers. Paint is claimed to contain a mass of minute "built in" fire extinguishers — that is, when exposed to flame it pours out carbon dioxide and calcium chloride which act to smother that fire and retard the spread of flame right on the surface protected.

This oil base paint has been listed by Underwriters' Laboratories. It is available to regional paint manufacturers on a licensing agreement.

(Data, tests and other particulars may be obtained from National Fire Retardant Corp., Dept. CP, 20 So. Central, Clayton, Mo. . . or for more information check CP 7191 on handy form, pages 2 and 3.)

Stresses safety factors in four data sheets

National Safety Council has recently published four data sheets of value to those in the chemical field.

Data Sheet D-204 covers xylene and toluene and gives properties, uses, fire and toxic hazards encountered with their use. Proper detection and protection equipment is illustrated.

Data Sheet D-206 gives the same information on the oxides of Nitrogen. Data Sheet D-208 covers amyl acetate.

Data Sheet D-210 is more general in scope, treating some of the precautions to be observed in acid plants.

All four data sheets are four-page illustrated bulletins and have three hole perforations.

Bulletins are issued by the National Safety Council, Dept. CP, 425 N. Michigan Ave., Chicago 11, Ill. When inquiring specify CP 7192 on handy form, pages 2 and 3.

remember . . . there's more to fire protection than just the devices

Many firms manufacture excellent protective devices. In fact, those offered by Blaw-Knox are among the finest. But—more important is the way in which these devices are put together into a fire protection system.

For example, a Blaw-Knox Automatic Fog System, controlled by rate-of-rise thermostats, springs into action instantly when activated by temperatures rising at an excessive rate. A smothering blanket of millions of finely divided particles of quenching water absorbs and dissipates heat—cools dangerously hot equipment and chokes off fire's vital supply of air. At that same instant, alarms sound. The damage is confined and adjacent areas are protected.

Without such a system, engineered and installed to guard against your specific hazard, the most effective devices are worthless.

Fire strikes quickly and when least expected. Be prepared to strike back with a Blaw-Knox Automatic Fog System.

Blaw-Knox will engineer and install the type of system that will provide you with a maximum of protection at a minimum of cost. Let a Blaw-Knox Fire Protection Engineer study your needs, and submit a cost estimate and layout. There's no obligation.

BLAW-KNOX FIRE PROTECTION SYSTEMS carry approvals of all insurance underwriters

- Deluge Systems • Wet Pipe Systems • Dry Pipe Systems
- Water Spray and Fog Systems
- Rate-of-Rise Sprinkler Systems
- Foam and Carbon Dioxide Extinguisher Systems

You'll be interested in the new Blaw-Knox booklet, "Fire Can Destroy Your Business." There's no charge. Write for it.

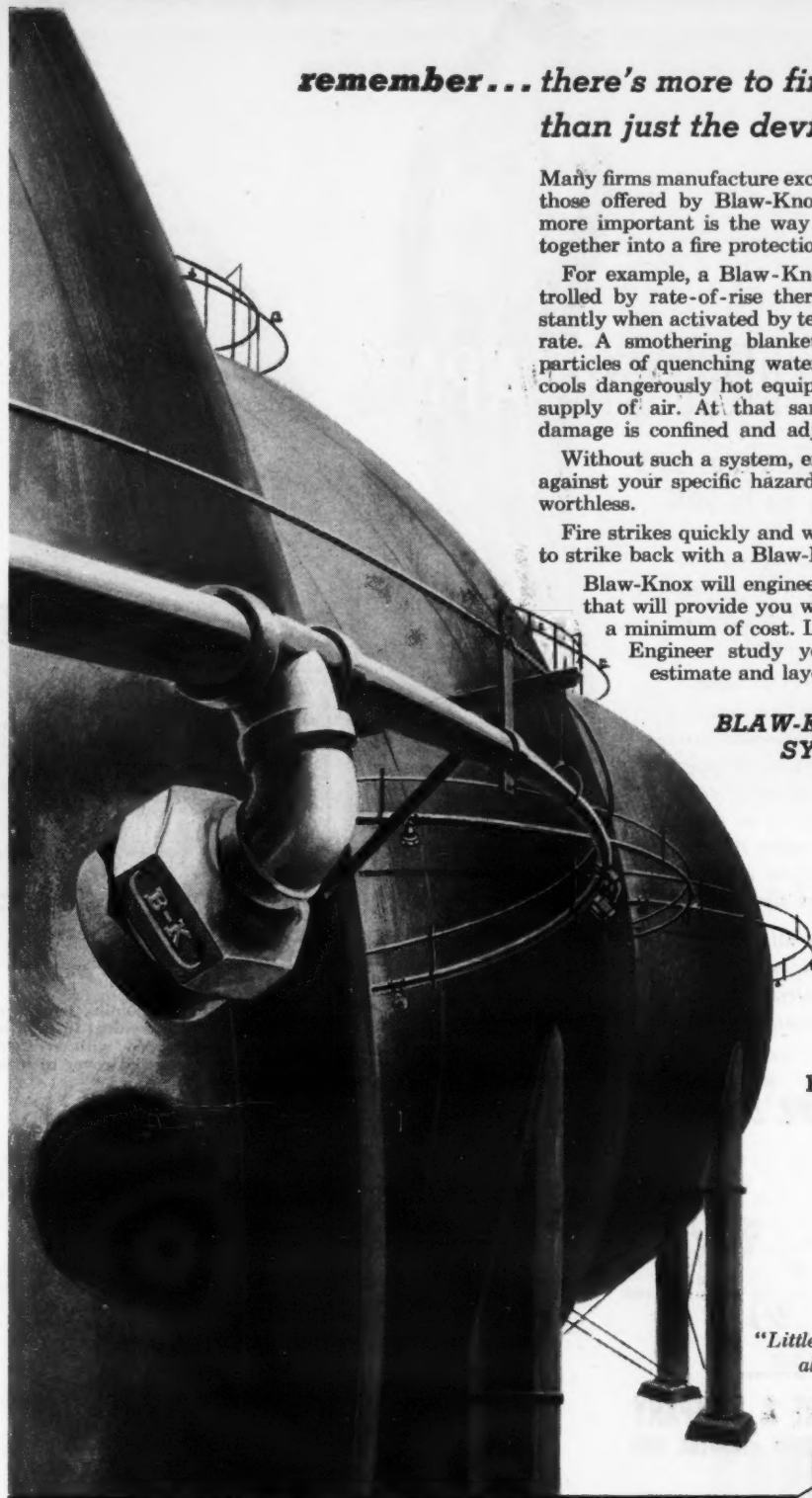
"Little Joey Sprinkler" always on the job

BLAW-KNOX

BLAW-KNOX COMPANY

Automatic Sprinkler Department
Pittsburgh 33, Pennsylvania

When inquiring check CP 7193 on handy form, pgs. 2-3



DEKORON IMPERVAPAK

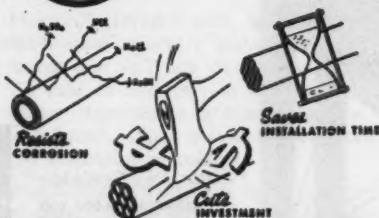
the instrument line harness that cuts tubing installation costs up to 50%

Worried about high instrument tubing installation costs? Then Dekoron Impervapak—the corrosion-proof instrument tubing harness—is just what the cost analyst ordered.

With Dekoron Impervapak there's no need to laboriously install instrument lines one at a time. Users say seven-tube Impervapak harness can be installed as rapidly as two single lines of ordinary instrument tubing. Savings are correspondingly greater with 10, 14 or 19-tube harness. Compact construction makes the installation neat and less subject to mechanical damage; no special brackets are needed.

And perhaps most important of all, Dekoron Impervapak is impervious to attack from even the most severe industrial atmospheres or weather conditions.

Dekoron® tubing



SAMUEL MOORE & COMPANY
DEKORON TUBING DIVISION • MANTUA, OHIO

Send for your free copy of Bulletin L-6506 "3 Ways to Whip Corrosion and High Tubing Installation Costs in Your Plant."

JUNCTION BOX

Two types available: for joining lengths of tubing, or for taking off individual lines to instruments (shown). Equipped with synthetic rubber grommets and gasketed cover to make box airtight.

DEKORON IMPERVAPAK METL-COR

Harness composed of 4, 7 or 10 individual copper or aluminum tubes with thick sheath of corrosion-proof polyethylene plastic. In coils of 50 or 100 feet.

DEKORON IMPERVAPAK POLY-COR

Harness made of individual color-coded polyethylene tubes with thick vinyl plastic sheath. Completely corrosion proof. Natural resiliency resists physical damage. In 500-foot coils of 4, 7, 10, 14 or 19 individual lines.

SAFETY

Puff up into insulating mat when exposed to intense heat . . .

coatings not only hold flame away but also retard heat penetration

Uses: Albi 99 coating is reported to give effective protection against fire and heat on all surfaces. While originally designed to protect metal surfaces against the structural failure caused by severe heat, tests have shown that Albi 99 will provide protection for all types of materials, combustible and non-combustible.

Albi PC gives protection to interior combustible surfaces. It is especially designed for use on unpainted wooden surfaces because of its strong bonding qualities. Where previously painted surfaces are involved, it may be used as a prime coat, but in this case it must be overcoated either with conventional oil paint or, for additional protection, Albi 99.

Features: When Albi fire retardant coatings are exposed to intense heat and fire, they quickly puff (300°F) into a tough, non-combustible insulating mat, many times their original thickness. The mat is reported not only to hold flame away but also acts to retard heat penetration to the surface — thus protecting against structural failure.

Description: Albi 99 is a ready-to-use lacquer type coating which may be applied directly to new or unpainted surfaces. It may be brushed or sprayed on. Albi PC is a water-extendable resin base coating. It is resistant to moisture and humidity and where maximum washability plus additional fire protection are desired, it may be overcoated with Albi 99.

Following are some figures on flame spread for the coatings. The flame spread is the distance the flame travels in a given time under test chamber conditions. The Building Officials Conference of America has set up the following classifications:

	Flame Spread
Incombustible	0-25
Fire Retardant	25-50
Slow Burning	50-75

Table of Coverage Recommendations (No. of Coats)*

Coating	Surface	Coverage	Flame Spread
99	Fir	250 sq ft/gal (1)*	65-70
	Fir	300 sq ft/gal/coat (2)	50
	Cellulose Board	175 sq ft/gal (1)	35-45
PC	Fir	250 sq ft/gal (1)	50-60
	Fir	175 sq ft/gal (1)	35-55
	Fir	200 sq ft/gal/coat (2)	30

Pictures show results of fire tests on an I-beam supporting a 150-gal tank. The beam was suspended horizontally over a burning pit and supported to give a 13 ft span. It was center loaded using the tank supported on three legs. Two legs were large heavy channels of sufficient strength to withstand fire exposure. Third leg was a shortened structural member for center loading of the beam.

Loading (1383 lb) was accomplished by filling the tank with water and adding lead weights. Burning pit was fed with oil to produce 5,850,000 Btu/hr.

When inquiring check CP 7194 on handy form, pgs. 2-3

SAFETY



Test Results

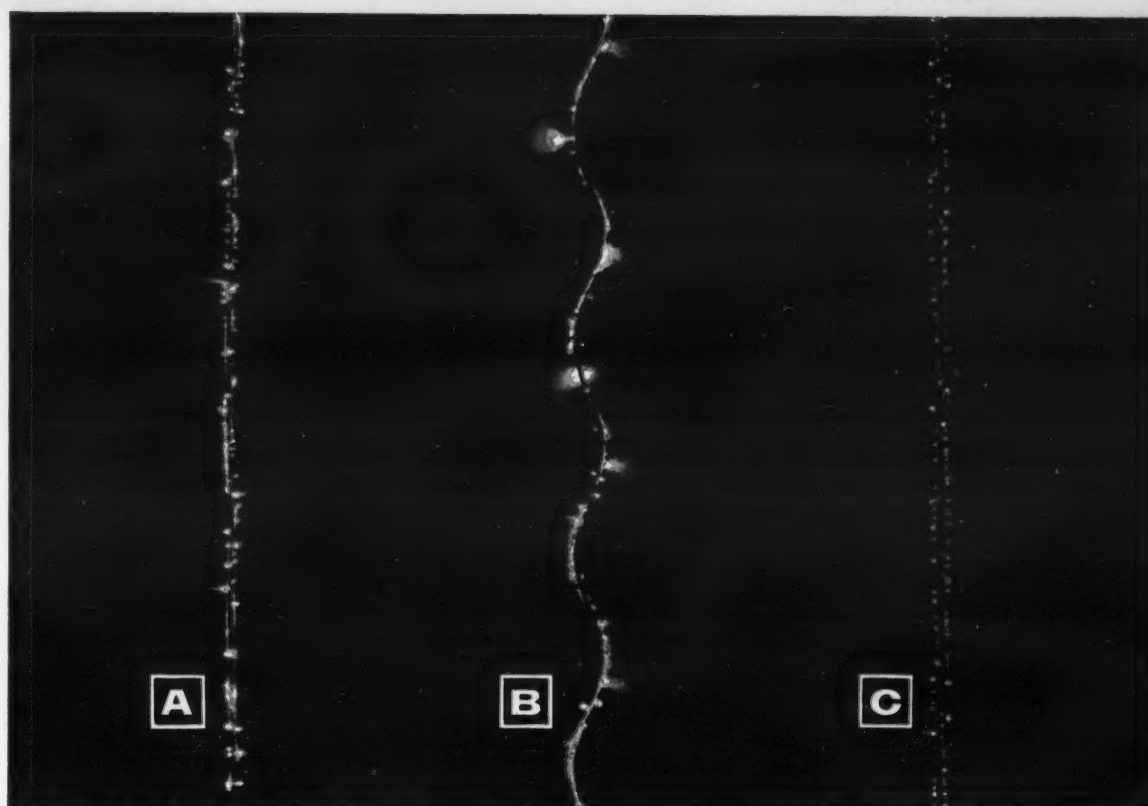
	15	16
Coating	none	2 coats 99 1 coat PC
Exposure time, min.	10	26
Max. beam temp., °F	1410	1410
Deformation started, min.	8	20
Time of complete failure, min.	10	26

(Coatings are manufactured by Albi Manufacturing Co., Inc., Dept. CP, 98 East Main St., Rockville, Conn. . . . or for more information check CP 7195 on handy form, pages 2 and 3.)

Outlines procedure for toxicity tests

Toxicity evaluation of new chemical products is the responsibility of the manufacturer, according to the National Safety Council. Bulletin prepared by that agency gives existing regulations and proposes new procedure for evaluating toxicological and physiological properties of new chemicals before marketing. Detailed tests for determining toxicity are outlined, along with standardized terminology for toxicity ranges.

Single copies of "Toxicity Evaluations of New Chemical Products" are available from the National Safety Council, Dept. CP, 425 N. Michigan Ave., Chicago 1, Ill. When inquiring specify CP 7196 on handy form, which is located between pages 2 and 3.



The A B C of Electric Precipitation

The efficiency of *any* electric precipitator depends on the quality of the corona emission from the electrode, for it is this emission that 'charges' the dust.

Pictured above are the three most frequently used electrodes for doing this job. You can see the quality of the corona for yourself. We'll be glad to give you an actual demonstration.

Other precipitators use electrodes A and C which give off only fair emission. Use of fine wire (to increase emission) leads to structural weakness. Use of heavy wire (to give strength) means poor emission.

The exclusive Buell Spiralectrode (B) combines strength with peak emission.

The outstanding on-the-job performance of the new Buell Spiralectrode is typical of the advances made by Buell Engineers. Con-

tinuous-cycle rapping, for example, proved in service for 20 years has *never* caused "puffing".

Buell has consistently led the way to greater efficiency, through a long series of technical discoveries and advances, in all types of dust collection.

Get all the facts. Send for our informative brochure—The Collection and Recovery of Industrial Dusts. It explains all three Buell Systems of industrial dust collection. Send for your copy today. Write Dept. 11-C, Buell Engineering Company, 70 Pine Street, New York 5, New York.

buell



20 Years of Engineered Efficiency in
DUST COLLECTION SYSTEMS

When inquiring check CP 7197 on handy form, pgs. 2-3



TAKES THE HEADACHES OUT OF BUYING FABRICATED PROCESSING EQUIPMENT



Gussett-built Charging Pots
175 lb. working pressure
Type 316 Stainless Steel

You save time and trouble (and, frequently, more than a little of the cost) when you put your special equipment problems up to Gussett.

Gussett engineers are able to prepare shop drawings for most efficient fabrication from your design prints, description or service requirement data, relieving you of the responsibility and insuring economical production and good delivery schedules.

Gussett has one of the most modern and complete fabricating plants with every facility for handling the work efficiently and speedily yet is small enough to accord every job the personal interest vital to successful handling of custom fabrication.

... And Gussett brings to bear on every job the experience and "know-how" of 40 years of pioneering in the production of fabricated equipment.

Include Gussett in your next "Request for Quotation" mailing. If it requires personal contact, a wire or phone call (Canton 7-3413) will bring a qualified representative.

THIS FILE BULLETIN WILL

HELP YOU to plan your fabricating jobs. It contains a complete listing of Gussett facilities and capabilities. Write for a copy.



GUSSETT

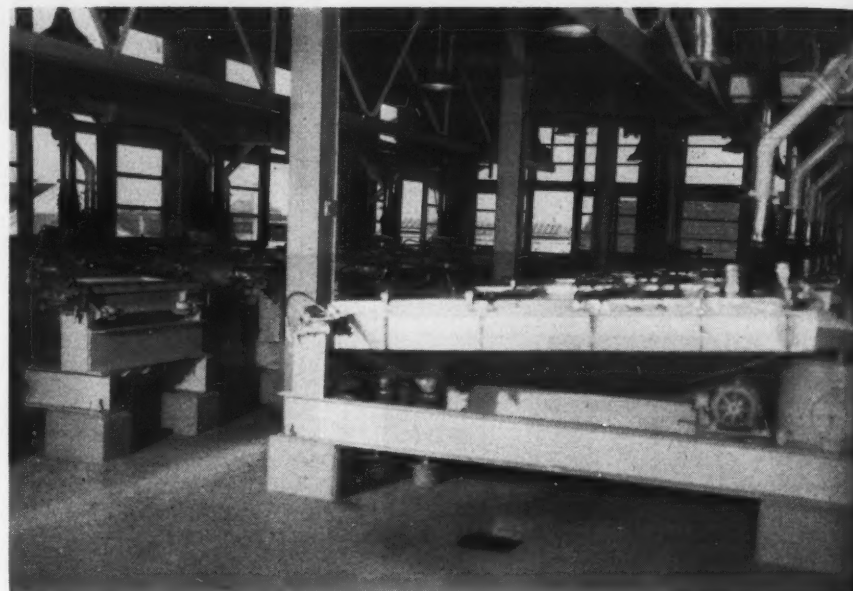
BOILER & WELDING, INC.

1545 WHIPPLE RD. S. W.
CANTON 10, OHIO

Plain or Lined Tanks • Accumulators • Bins • Catalyst Columns • Chutes
Caustic Strippers • Condensers • Coolers • Evaporators • Pressure Vessels
Fractionating Towers • Jacketed Kettles, Tanks and Pipe • Code Vessels
Process Piping • Scrubbers • Stills • Vulcanizers • Machine Bases & Frames

When inquiring check CP 7198 on handy form, pgs. 2-3

*engineering
and maintenance*



Excellent housekeeping made possible with use of gyratory screeners is evident in this photograph of units in operation at Corn Products Refining Co.

low maintenance, less fumes result with gyratory screeners

**Corn Products Refining Co., using
130 of units in Argon Plant,
eliminates building deterioration
formerly caused by SO₂, while
improving housekeeping, safety**

Problem: At Corn Products Refining Co.'s Argon, Ill. plant, first step in processing the grain involves steeping and grinding. It is then necessary to screen corn to separate the starch from the fiber. Fiber is reprocessed and the starch is made into sugar, syrup, and other products in further operations.

Formerly this screening step was handled by six-sided, cylindrical, wooden reels, 30" in diameter and 8' long. These units were inclined at a 5° angle to the horizontal. Feed went inside and the cylinder rotated, causing the starch to pass

through a screen while the fiber was retained.

Since some SO₂ gas is given off in the process, wood reels deteriorated rapidly, causing excessive maintenance. Open cylinders of units allowed the sulfurous fumes to corrode concrete and steel framework of the building. Another disadvantage was that equipment allowed some of the grain to be spilled on the floor.

Solution: Eight years ago, the first Rotex Screener was acquired and placed in operation in the wet starch division. This unit has a rectangular screen box that operates with a gyratory motion. All of machines on wet separations at Argon have a single Nylon screen surface, while most of other machines in use at plant have two screen surfaces. Each Nylon screen surface is flat and nearly level, normal angle of inclination being 4°.

Units presently in use in the wet starch

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division are fabricated of 316 stainless steel. They are totally enclosed and vented to remove fumes. Drive head is balanced with weights that are rotated in opposite direction, compensating for weight of the screenbox and minimizing vibration. Entire drive mechanism is in a tight cast iron casing and operates in an oil fog. Connections to and from machine are made by means of a corrugated Neoprene rubber sleeve, which provides flexibility and a fume-tight connection.

Not long after the first gyratory screener was installed, additional units were obtained. At present, the Argo Plant has approximately 100 in use in the wet starch division and 30 in dry starch operations, the latter units not being stainless steel. A considerable number of the units are also in use in four other plants of the Corn Products Refining Co.

Results: Screens have been found to operate satisfactorily 5 1/3 days per week in continuous operations with a minimum of maintenance. The screens are easily cleaned, about 15 minutes being required to wash two units.

One of the principal advantages of the screeners is that they are totally enclosed. Confinement of the SO₂ fumes has eliminated deterioration to the building and improved employee morale. Working conditions are better and area has been made safer. Since material being processed now remains inside of the units, housekeeping has also been improved. Prime purpose of the installation was to maintain the high standard of quality at a lower cost.

(Rotex Screeners are product of The Orville Simpson Co., Dept. CP, 1230 Knowlton St., Cincinnati 23, Ohio . . . or for more information check CP 7199 on handy form, pages 2 and 3.)

Close temperature control given by mobile melting furnace

Uses: For melting rubberized joint sealers, such as rubber and plastic, rubber and asphalt, etc.

Features: Double-jacketed melting furnace (on wheels) gives double-boiler heating effect which assures close temperature control by means of indirect heat, essential in melting of joint sealers and other compounds having critical maximum temperature limitations.

Description: An oil with high flash point is used as heat transfer medium. LP gas is used as fuel. Furnace can be used with or without removable agitator. It is also available with draw-off cock where specified.

Sixteen gallons of compound can be brought up to heat in 30 min to an hour, depending on type of compound being melted. Critical maximum temperature can be maintained during continuous pouring, adding cold material as melted material is used.

(Melting furnace is a product of Hauck Mfg. Co., Dept. CP, 124-136 Tenth St., Brooklyn 15, N. Y. . . . or for more information check CP 7200 on handy form, pages 2 and 3.)

CHEMICALS collected by AAF dust collectors

Acid
Acid filtrate
Alkali
Alumina
Alumina hydrate
Aluminum bisulfide
Aluminum catalyst
Aluminum chip
Aluminum nitrate
Aluminum oxide
Aluminum powder
Aluminum silicate
Aluminum silicate, (hydrous)
Ammonia
Ammonium nitrate
Ammonium perchlorate
Ammonium sulfate
Aniline dye
Antimony hydride
Antimony oxide
Barite
Barium carbonate
Barium nitrate
Barium oxide
Barium sulfate
Barium sulfide
Bauxite
Bentonite
Benzene derivatives
Beryllium
Beryllium oxide
Bicarbonate of soda
Bisulfide liquor
Bone
Bone black
Borax
Bronze powder
Calcium aconitate
Calcium carbide
Calcium carbonate
Calcium phosphate
Calcium silicate
Calcium soap
Calcium stearate
Calcium sulfate
Carbide
Carbon
Carbon black
Casein
Cast iron chip
Catalyst, clay
Catalyst, spent oil
Caustics

OPERATIONS controlled by AAF dust collectors

Atomizer
Bagging
Bassina Machine
Breaker
Causticizer tank
Compounding
Conveyor
Conveyor, pneumatic
Cookers
Cooler
Crusher

CHEMICALS collected by AAF dust collectors

Caustic soda
Cellulose acetate
Charcoal
Chrome ore
Chrome pigment
Chromic acid mists
Citric acid
Clay
C

It's a Matter of RECORD!

721 AAF Dust Collectors are in Chemical Industry service.

326 chemical plants use AAF Dust Collectors.

69 dust producing operations have been controlled.

196 different chemical dusts are efficiently collected.

You have dust collection problems that are difficult and different! We'd appreciate the opportunity of discussing them with you.

AAF American Air Filter
COMPANY, INC.
258 Central Avenue, Louisville 8, Kentucky
American Air Filter of Canada, Ltd., Montreal, P. Q.

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Filter presses
Furnace, electric
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Hammer mill
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Hoppers
Kettles
Kettles, Dopp
Kiln
Kiln calcining
Kiln sintering
Loading, bag

Creosote
Cupric oxide
Cyanide fumes
D D T
Defoliant
Detergent
Dextrose
Diatomaceous earth
Dicalcium phosphate
Disinfectant
Dolomite
Dye
Enamel
Fertilizer
Filler material
Fish meal
Fluorescent powder
Fluor spar

When inquiring check CP 7201 on handy form, pgs. 2-3



The Series R Durcopump

Designed and built for rugged, dependable service, Series R Durcopumps are made in twelve standard alloys. From the high silicon irons, through the 18-8 type stainless steels, to the Chlorimets, Durcopumps are available in the right alloy to do the best job of pumping corrosive solutions. Standardize on Durco corrosion resisting alloys and equipment.

Just mark and mail the coupon for Durcopump bulletin P/1. Or we'll have one of our engineers in your area call if you'd like.



THE DURIRON COMPANY, INC.
Dayton, Ohio

THE DURIRON COMPANY, Inc., Dayton, Ohio, CP

- ☐ Please send Bulletin P/1.
☐ Please have engineer call.

NAME _____ TITLE _____
COMPANY _____
ADDRESS _____
CITY _____ STATE _____

When inquiring check CP 7202 on handy form, pgs. 2-3

ENGINEERING & MAINTENANCE

Water washes paint from brushes after they have soaked

Uses: For cleaning all types of natural and synthetic bristle brushes.

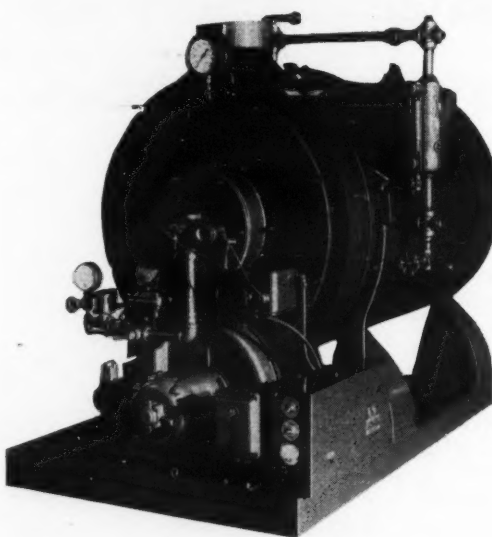
Features: Cleaning brushes is said to be a simple two-step operation — soak brush until paint (hardened or otherwise) is dissolved and then rinse brush in water.

Description: Non-flammable, non-odorous liquid cleaner is a combination of solvents and soaps. When brush is immersed in cleaner, saponification takes place, completely removing all solvents, and leaving bristles soft and pliable. Cleaner is said to be particularly effective in restoring brushes hardened with latex base paints.

(Paint brush cleaner is a product of M & H Laboratories, Dept. CP, 2705 Archer Ave., Chicago 8, Ill. . . . check CP 7203 on handy form, pages 2 and 3.)

Small 50 hp fire tube boiler takes only 20 sq ft space, 4' 8 1/4" headroom

Designed for installations where space is limited, small 50 hp fire tube steam boiler takes up an area of only 20 sq ft, is 4' 8 1/4" high. Unit weighs only 3550 lb, and since it requires no cement foundation or stack, it can be mounted where water, fuel, and electricity are available. Simple flue vent is all that



Can be mounted anywhere that fuel, water, and electricity are available

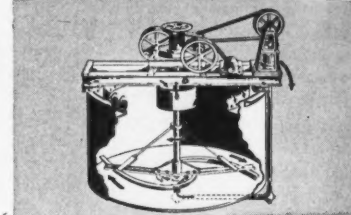
is necessary to operate at about 80% efficiency. Multiple unit installations of the package boiler, C1725, can be made.

(Steam boiler is a product of Cyclotherm Div., US Radiator Corp., Dept. CP, Oswego, N. Y. . . . or check CP 7204 on handy form, pages 2 and 3.)

DENVER EQUIPMENT



... NOTE THESE FEATURES ...

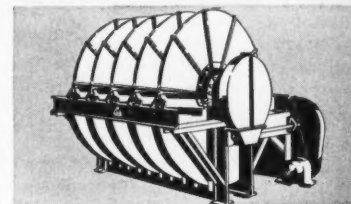


DENVER THICKENER

Size: 6' diameter to 60' diameter.

Features: Beam superstructure, spiral rakes, cut gears in integral lift reducer.

Price examples, 8' dia. x 6' \$1427.00
with steel tank 20' dia. x 10' 3476.00
less drive. 30' dia. x 10' 6959.00
FOB Denver.

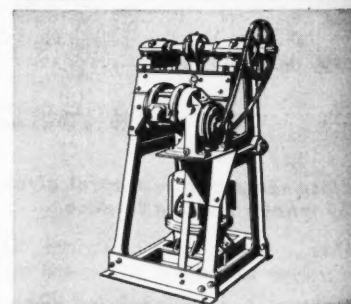


DENVER DISC FILTER

Size: 2', 4' and 6' dia. 2 to 8 disc.

Features: Oversize center shaft, simple renewable automatic valve.

Price examples, 2' dia. x 2 disc. \$1573.00
less drive and 4' dia. x 3 disc 2272.00
vacuum equipment. 6' dia. x 4 disc. 4202.00
FOB Denver.



DENVER DIAPHRAGM PUMP

Size: 1" Simplex to 6" Quadruplex.

Features: Adjustable stroke, molded rubber valve seats, positive action.

Price examples, 2" Simplex \$ 406.00
less motor. 4" Duplex 824.00
FOB Denver. 6" Duplex 1914.00

Technical bulletins on request



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EQUIPMENT
COMPANY

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its friends happier, healthier and wealthier"

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Phone CHickering 4-6510

Toronto 1, Canada
220 Bay Street
Phone Empire 3-8836

OFFICES IN EL PASO, MEXICO, D.F., VANCOUVER,
LONDON, JOHANNESBURG.

When inquiring check CP 7205
on handy form, pgs. 2-3

CHEMICAL PROCESSING

Valve lubrication made simpler by lube tube design

Uses: For filling lube guns (flat-top tube) and for filling valve lube chambers (long-spouted tube).

Features: With long-spouted tube, a valve lube chamber can be filled easier because spout gets lube farther down into valve shank than is possible with previous methods, according to manufacturer.

With the flat-top tube, a lube gun can be loaded quickly by cutting off tube top and turning a key which squeezes contents into barrel.

Description: Gun lubricant tubes are available in packages of six;



Long spout gets lube farther down into valve shank

bulk lubricant tubes, singly and in packages of four. Eight types of lubricants can be supplied in tubes.

(Tubes for lubrication of Nordstrom valves are products of Rockwell Mfg. Co., Dept. CP, 400 N. Lexington Ave., Pittsburgh 8, Pa. ... or for more information check CP 7206 on handy form, pages 2 and 3.)

For more information on product at right, specify CP 7207 ... see information request blank between pages 2 - 3.



Skill and Ingenuity at Work for You

Your Eimco filter is a product of skill and ingenuity wrought from more than half a century of service to the process industries.

As a matter of fact, think about it — you wouldn't want it any other way. When you've worked out a process that requires the culture or slurry to be handled just so to produce your laboratory results, you can't afford to recommend anything but the finest equipment all the way through the plant.

Your finest product in pressure or vacuum Filtration is an Eimco.

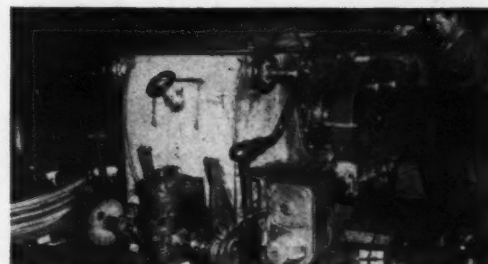
Costs — look beyond first cost — to the savings in higher recovery of values, greater clarity of filtrate, longer trouble free life in the equipment and in the case of the unit shown above, an Eimco precoating unit, about double the life of one precoat.

Write for information on the finest filters available anywhere to The Eimco Corp., P. O. Box 300, Salt Lake City 10, Utah.

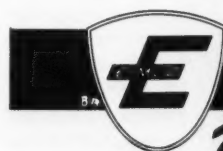
Each Eimco filter for the special process industries receives individual attention in engineering (above) and inspection (below).



Skilled mechanics with a field knowledge of filtration problems machine and assemble your specialized Eimco filter.

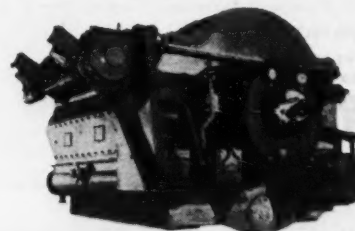


The finished product is completely assembled in the shop even if dismantling is necessary for shipment. An Eimco man will supervise its installation.



THE EIMCO CORPORATION
Salt Lake City, Utah, U.S.A.
Export Office Eimco Bldg. 52 South St. New York City

You Can't Beat An Eimco



WE JUMPED PRODUCTION WITH THIS CENTRIFUGAL

AN A.T.&M. SUCCESS STORY BY SAM SPINNER

THESE PIGMENT FILTERS ARE A HEADACHE, SAM. THEY DO THE JOB ALL RIGHT. BUT EVERY TIME WE CHANGE COLORS, WE HAVE TO CLEAN THE FILTERS—AND PRODUCTION STOPS

WHY NOT USE A CENTRIFUGAL TO DO YOUR FILTERING AND DEHYDRATING? FORGET THE FILTERS!

LATER

WORKS GREAT! SPINS THE MOISTURE OUT... AND NO TIME LOST

THE FILTERING ELEMENT THAT LINES THE BASKET GETS CLEANED IN A HURRY, DOESN'T IT?

SURE! AND ANOTHER THING—WE CAN PROCESS LARGER BATCHES NOW AT GREATER SPEED. IT SAVES US MONEY, SAM. WE LIKE IT

FREE ILLUSTRATED BOOKLET

AMERICAN TOOL & MACHINE COMPANY
1412 Hyde Park Avenue, Boston 36, Mass.

Please send me my free copy of the new AT&M booklet "Centrifugal Force." I am interested in the following processes:

Separation ☐ Extraction ☐ Dehydration ☐ Clarification ☐ Coating ☐
Filtration ☐ Draining ☐ Thickening ☐ Impregnation ☐ Sedimentation ☐

ANY OTHER PROCESS.....

SAVE TIME, SPACE AND COSTS WITH

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When inquiring check CP 7208 on handy form, pgs. 2-3

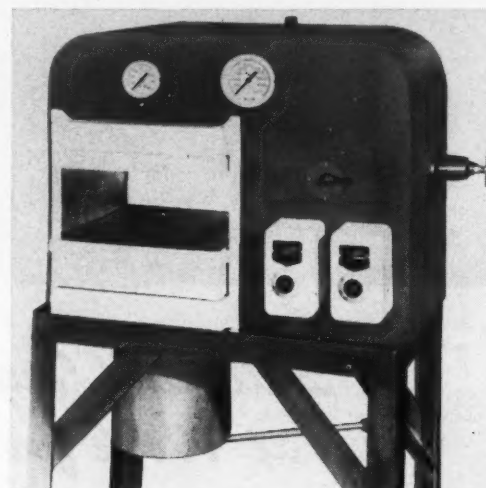
ENGINEERING & MAINTENANCE

Adaptability for laboratory or production is featured by hydraulic press

Uses: For precision molding of rubber and plastic, other where controlled heat and pressure jobs.

Features: Unit is adaptable for both laboratory and production uses. Press is small, compact, and accommodates 12 x 12" platens. Equipment can be handled by women operators.

Description: Press is electrically heated and air operated. Each unit is equipped with individual controls which make it possible to regulate hydraulic



Equipment can be handled by women operators

pressure for each operation with the touch of a finger. Pressure range is from 50 to 4000 psi, hydraulic pressure aggregating approx 55 t capacity.

(Hydraulic press is a product of Atlas Hydraulics, Inc., Dept. CP, 3576 Ruth St., Philadelphia 34, Pa. ... or check CP 7209, pages 2 and 3.)

Fog-maker covers 35,000 cu ft of enclosed space in 5 min

deposits a uniform, continuous film on both top and underside surface areas

Light, portable fog-maker atomizes pesticide of fumigant into a dense, clinging vapor. Basically apparatus consists of a pulse-jet heater, fuel tank, hand air pump, pesticide or fumigant tank, and long rifle-like exhaust tube.

Heater generates an exhaust stream through the tube. When device is sufficiently warmed, a tap and valve are opened to admit insecticide or fumigant into end of tube. When poison-charged exhaust hits atmosphere, fog results.

Unit weighs 30 lb (filled) and can be easily carried by one person. Fog output is about 35,000 cu ft

"SERV-RITE"

Insulated Thermocouple Wire Extension Lead Wire

FOR

PLATINUM COUPLES
CHROMEL ALUMEL
IRON CONSTANTAN
COPPER CONSTANTAN
IRON CUPRONEL

No matter what your wire or insulation requirements may be, you can depend on Gordon "Serv-Rite" insulated wire for pyrometers—recognized as a standard of highest quality for nearly half a century. All "Serv-Rite" wire is now manufactured in the new, completely modern Gordon plant, employing up-to-date equipment and machinery, supervised and operated by skilled technicians—your guarantee of continued precision quality. In addition to maintaining large stocks of all common types of wire, Gordon will manufacture special insulation, in long or short runs, to suit your individual needs and meet your most rigid specifications.

All Types of Insulation

Felted Asbestos
Asbestos Braid
Weatherproof Braid
Glass Braid
Polyvinyl Plastic
Nylon Braid
Stainless Steel Armored Braid
Silicone Treated
Cotton Braid
Lead Jacket



The home of "SERV-RITE"

Full Particulars on Request

GORDON SERVICE

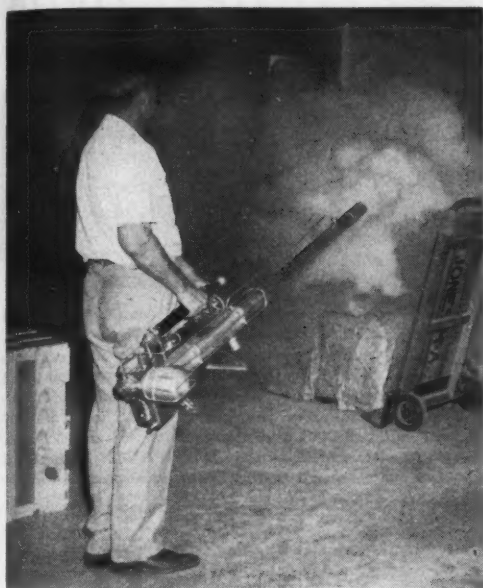
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Thermocouple Supplies • Industrial Furnaces & Ovens
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Dept. 19 3000 South Wallace St., Chicago 16, Ill.
Dept. 19 2035 Hamilton Ave., Cleveland 14, Ohio

When inquiring check CP 7210 on handy form, pgs. 2-3

CHEMICAL PROCESSING



Output adjustable from a dry mist to wet fog

in five minutes. Room of 1755 cu ft requires about 15 seconds for treatment, and about 0.06 cu in of solution will fill 35 cu ft.

Fuel tank holds 1.2 quarts of gasoline which will operate device for one hour. The insecticide tank holds 4.7 quarts, enough for a half hour's operation. Unit can also be converted for use as a frost-fighter or flame-torch.

(Swingfog is a product of Devenco, Inc., Dept. CP, 150 Broadway, New York 38, N. Y. . . . or for more information concerning manufacturer's product, reader may simply check CP 7211 on handy form located between pages 2 and 3.)

No wrinkles caused in vinyl by synthetic, solvent plastic cement

Recently developed plastic cement is said to cause no wrinkling of low-gage vinyl plastic and work equally as well on 20-gage vinyl.

Cement rubs off easily from plastic when operator gets some on outside of product being fabricated. After removal, there is no residual stain or marring of finish. Although cement has very low tack and allows stacking of parts, it gives a good bond if cemented areas are put together the following day. This is known as overnight retack. Due to low tack, there is no clogging of needles if article is finally stitched.

(No. 100 Alstik Plastic Cement is a product of Allen Plastics Corp., Dept. CP, 1015 E. 173rd St., New York 60, N. Y. . . . or for more information about this development simply check CP 7212 on the convenient Reader Service slip located between pages 2 and 3.)

Here's how MICRO-KLEAN halves your filter cartridge replacement costs



ITS GRADUATED DENSITY
IN DEPTH

INCREASES CAPACITY FOR DIRT
ACCUMULATION IN CARTRIDGE

DOUBLES THE EFFECTIVE
CARTRIDGE LIFE. That's how...

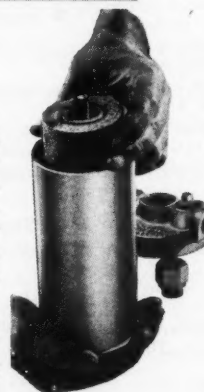
IT CUTS CARTRIDGE
REPLACEMENT COSTS
IN HALF!

In effect, every MICRO-KLEAN cartridge provides an almost infinite series of screens, ranging from relatively coarse on the outside down to 10 microns in the center.

Because of MICRO-KLEAN's graduated density, particles are trapped throughout the entire depth of the filter element, giving it twice the effective life of ordinary filter cartridges. Thus cartridge replacement costs are cut in half.

If you're looking for dependable, effective filtration at the lowest possible cost, Cuno's MICRO-KLEAN is your answer. You can get MICRO-KLEAN in densities of 10, 25, and 50 microns.

M.3.D



REMEMBER, IF YOU CAN PUMP IT, CUNO CAN FILTER IT



ENGINEERED FILTRATION

Removes More Sizes of Solids
From More Kinds of Fluids

AUTO-KLEAN (disc-type) • MICRO-KLEAN (fibre cartridge) • FLO-KLEAN (wire-wound)

CHEMICAL PLANTS SAVE VALUABLE PRODUCTION TIME WITH MICRO-KLEAN FILTERS

MICRO-KLEAN cartridges give longer effective operation

Shutting down fluid flow systems in order to clean filters or replace cartridges can be a costly problem. Here's how Cuno's long-lived MICRO-KLEAN filters will save you valuable production time by keeping these shut-downs to a minimum.

Fibre density of MICRO-KLEAN increases toward the discharge side of the cartridges, enabling it to trap contaminants throughout the entire depth of the filter element, instead of merely on the surface. This gives MICRO-KLEAN filters twice the effective life of ordinary filters which have the same fibre density throughout.

This graduated density in depth is made possible by Cuno's exclusive method of felting, which permits precision control of the cartridge structure. Also, each fibre of the MICRO-KLEAN filter is positively bonded in position by resin impregnation and polymerization for complete protection against channelling, rupturing, shrinking, or distortion.

The great porosity of MICRO-KLEAN's special cartridge permits high flow rates, often enabling you to speed up fluid processing. Installation and maintenance are simple; cartridges can be changed in a few seconds, as only one nut has to be removed.

That's why the MICRO-KLEAN will outperform any filter cartridge you have previously used. It will pay you to mail this coupon for full facts.

M.3.21

Cuno Engineering Corporation
Dept. 1621D South Vine St., Meriden, Conn.

Please send me more information on MICRO-KLEAN for.....and enclose
(fluid)
your free filtration analysis form.

Name.....

Company.....

Address.....

City.....Zone.....State.....

When inquiring check CP 7213 on handy form, pgs. 2-3

Now you can have
the advantages of **USCOLITE***
in your valves as well
as in your piping



*Uscolite is a registered trade mark of United States Rubber Company.

DESIGN DETAILS

Developed to supplement Uscolite* pipe and fittings, the new Uscolite bodied Hills-McCanna Diaphragm valve, now makes it possible to utilize Uscolite's advantages throughout your piping layout. The unique Saunders patent design of the valve coupled with the chemical resistance of Uscolite makes the valve ideal for plating, water treatment, and in the manufacture of fertilizer, bleach, storage batteries, pulp and paper, etc.

The Hills-McCanna Uscolite bodied valve is available in standard sizes from 1/2" through 2". It is suitable for pressures to 150 psi and for temperatures to 170° F. (at some sacrifice of pressure rating in larger sizes).

Write for details. HILLS-McCANNNA CO.
2370 W. Nelson St., Chicago 18, Ill.

HILLS-McCANNNA

saunders patent diaphragm valves

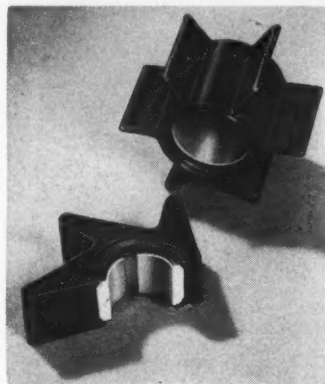
Also manufacturers of
Chemical Proportioning Pumps • Force-Feed Lubricators
Magnesium Alloy Sand Castings

When inquiring check CP 7214 on handy form, pgs. 2-3

MAINTENANCE

Bonding of rubber to metal, nylon announced

Manufacturer of rubber O-rings has recently announced a process for bonding Buna N and Neoprene rubbers to Zamac materials, white metals and aluminum, as well as



nylon. Rubber-to-metal process is already being used. Nylon bonding technique is expected to eliminate need for metal inserts where nylon is used as a bearing for rubber parts.

(Bonding process is a development of Dept. KP, Minnesota Rubber and Gasket Co., Dept. CP, 3630 Wooddale Ave., Minneapolis 16, Minn. . . or for more information check CP 7215 on handy form, pages 2 and 3.)

Resistance to acids feature of 8 oz plastic pumps

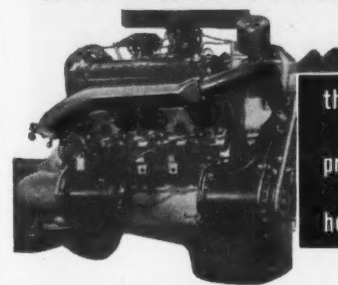
Uses: For handling muriatic solutions, hypo and film solutions, ammonia liquors, etc.

Features: Company states that tough, Neoprene compound impeller, the only moving pumping part, is inexpensive and resistant to more acids than any other rubber.

Description: These small, compact plastic pumps, in 3/8" port size, weigh only 8 oz and deliver up to 350 gph @ 10' head, 1750 rpm. Units obtain high self-priming suction lifts (15' dry — 25' primed.)

Model 3010 is available with several corrosion-resistant shafts: Mod-

where Quality counts in a HEAT RESISTANT FINISH



the manifold of the
1954 Lincoln is
protected by SICON
Silicone Base
heat resistant finish

● The Lincoln exhaust manifold is coated with SICON Black 7 x 933 to enhance and preserve its appearance. SICON maintained film integrity after subjection to a 24-hour heat test of 1000° F., substantially more severe than would be encountered under maximum operating conditions. This, plus a 10,000 mile road test, proved SICON to be the only finish suitable. SICON is so stable under heat that it is even used to protect critical parts of JET ENGINES! Available in Black, Aluminum, and Colors. Write for details...today!

Sicon

MIDLAND Industrial Finishes Co.
EAST WATER ST., WAUKEGAN, ILLINOIS
ENAMELS • SYNTHETICS • LACQUERS • VARNISHES
When inquiring check CP 7216 on handy form, pgs. 2-3

COLTON

FINEST QUALITY

STAINLESS STEEL TANKS

ALL TYPES—STORAGE—PROCESS

AGITATORS

ALL TYPES—PORTABLE—BUILT-IN

Write for Literature

ARTHUR
COLTON
COMPANY

Established 1887

Div. Snyder Tool & Engineering Company

3400 E. LAFAYETTE • DETROIT 7, MICHIGAN

When inquiring check CP 7217 on handy form, pgs. 2-3

CHEMICAL PROCESSING

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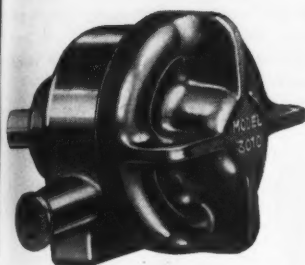
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pgs. 2-3
SSING

MAINTENANCE



Pump is self-priming

Model 3010-01 with 316 stainless steel shaft; Model 3010-02 with Hastelloy B shaft; Model 3010-03 with Hastelloy C shaft; and Model 3010-12 with Pyrex glass shaft.

(Plastic pumps are a product of Jabsco Pump Co., Dept. CP, 2031 N. Lincoln St., Burbank, Calif. ... or for more information check CP 7218 on handy form, pages 2 and 3.)

Wire and rayon combine to strengthen hose for LP gases

Uses: For the handling of liquefied petroleum gases such as butane and propane.

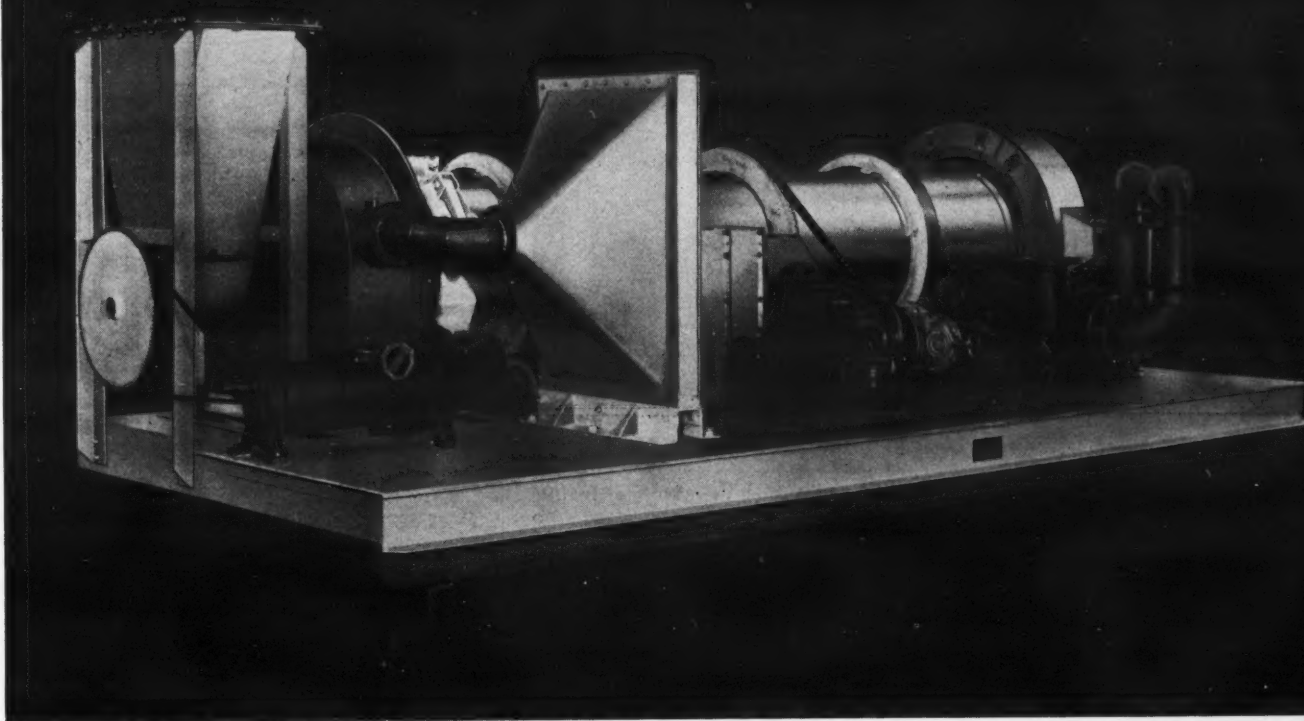
Features: Hose features a non-porous, oil resistant rubber tube and combined layers of horizontally braided steel wire and rayon cord reinforcement.

Description: Each hose size has a minimum burst of 1750 psi, with actual burst pressures exceeding 2300 psi. Each length has two separate static wires, interlaced with reinforcing braids, to insure full static conductivity.

Made on a mandrel which insures uniform inside diameters for quick, positive coupling, hose is available in sizes from 1/2 to 2".

(Hose for L-P gases is a product of Quaker Rubber Corp., Div. of H. K. Porter Co., Inc., Dept. CP, 1932 Oliver Bldg., Pittsburgh 22, Pa. ... or for more information check CP 7219 on handy form, pages 2 and 3.)

For more information on product at right, specify CP 7220 ... see information request blank between pages 2 - 3.



stainless steel

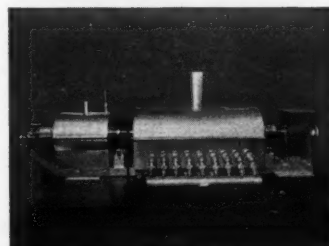
Anti-Biotic Dryer

... Specially designed unit removes an organic solvent from a newly developed anti-biotic—avoids product contamination.

● The drying cylinder with ground and sand blasted welds, and flights that lift the material and cascade it down through the heated air stream, present a smooth interior surface, without corners, permitting the entire interior surface to be cleaned thoroughly and quickly. Feed hopper, variable speed screw feeder, heating coils, air blower, air sterilizer, exhaust fan and cyclone dust collector are mounted on the same frame to insure permanent alignment of all parts and efficient trouble-free operation. This unit is an example of Bartlett-Snow's ability to design and build equipment that meets the most exacting requirements. Let us work with you on your next drying problem!



Rotary Cooler with Continuous Spiral Flight Permitting the Rate of Cooling to be Controlled by the Speed of Shell Rotation.



Experimental Calciner, Determines the Preferred Operating Conditions Preliminary to Building Full Size Plant Equipment.

DESIGNERS

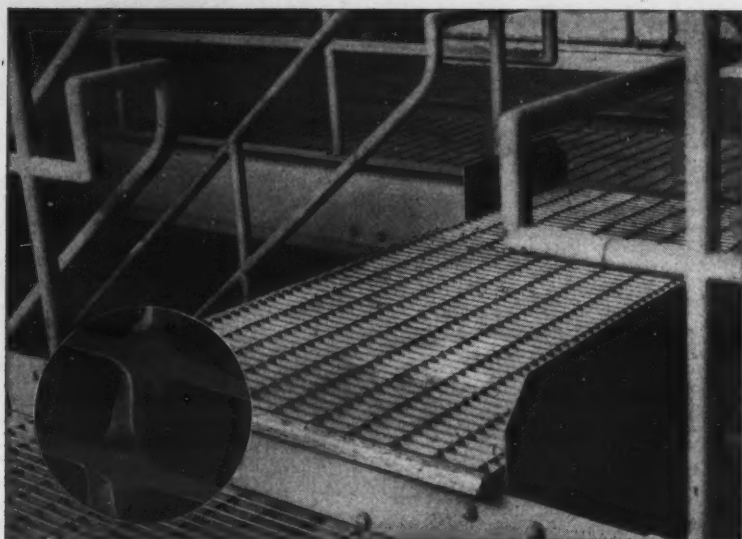
ENGINEERS

**BARTLETT
-SNOW**
CLEVELAND 5, OHIO

FABRICATORS

ERECTORS

Dryers • Coolers • Calciners • Kilns
"Builders of Equipment for People You Know"



Grating by BLAW-KNOX

where do you need steel grating?

There must be lots of places where you are now using grating—floors, platforms, walkways, catwalks and stair treads, for example.

But how about other uses—such as some sturdy shelving or a fan guard—or for covering a dangerous open pit or a light well. Take a good look around your plant and you'll probably come up with several jobs, including perhaps a new use, as steel grating is adaptable to many applications.

Any time you want some help on a job related to grating, we'll be glad to hear from you.

Only BLAW-KNOX Electroforged® Steel Grating and Stair Treads

—have these five exclusive features:



1. rigid one-piece construction—easy to install
2. all surfaces accessible—easy to paint
3. no sharp corners to clog—self-cleaning
4. maximum open area—for light and ventilation
5. non-slip twisted crossbar—safe footing

A short note will bring you a copy of new Bulletin No. 2365-R
—a dimensional sketch will bring you a quotation.



BLAW-KNOX COMPANY

2076 Farmers Bank Building • Pittsburgh 22, Pennsylvania

BLAW-KNOX EQUIPMENT DIVISION GRATING DEPARTMENT

GRATING APPLICATIONS: floors • platforms • walkways • catwalks • stair treads • fan guards • shelving • and many other uses, both outdoors and indoors, for versatile steel grating.

When inquiring check CP 7221 on handy form, pgs. 2-3

MAINTENANCE

**Triple design of descaler
accomplishes 3 times
the work . . .**

air-operated unit has fast chipping action

Uses: Designed primarily for cleaning rust, paint, and scale from boilers, tanks, and structural steel, fast chipping action of unit is said to make it ideal also for cleaning inside of large castings.



Weights 7½ lb

Features: Descaler, designated No. 326, has three piston units which operate with a rotary motion to do three times the work of manufacturer's No. 26 single tool, which otherwise has an identical design.

Description: Fitted with a lever cock valve, descaler can be furnished with a lever throttle. Unit weighs 7½ lb, has 7/8" bore with a 9/16" stroke, cross head length of 4 3/8", 3/8" air inlet, overall length of 10 3/4" with side throttle, and 13 1/8" length with end throttle.

(Descaler is a product of Thor Power Tool Co., Dept. CP, 175 N. State, Aurora, Ill. . . . or for more information check CP 7222 on handy form, pages 2 and 3.)

Easy opening, closing featured on valve

Valve which may easily be moved to fully open or tightly closed position by simply moving a small pilot cock or by operation from remote control stand is described in four-page bulletin.

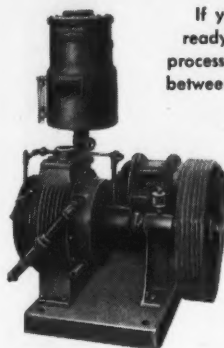
Unit can be used on water, oil, air, and many liquids — on pressures ranging from 15 to 400 psi — and is available in 2 to 36" sizes.

Bul W-8 is issued by Golden-Anderson Valve Specialty Co., Dept. CP, 2101 Keenan Bldg., Pittsburgh 22, Pa. Specify CP 7223, pages 2 and 3.

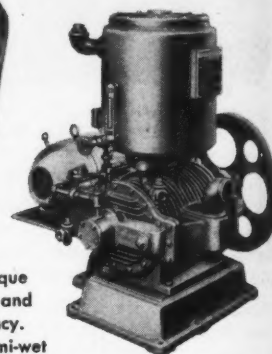
REACH AND HOLD YOUR WORKING VACUUM... Faster and at Lowest Over-all Cost!

If you want to pump-down fast to get ready for ultra-high vacuum...If your processing requires vacuum in the range between 5 mm. and 10 microns...

STANDARDIZE ON BEACH-RUSS PUMPS



Beach-Russ Pumps get down to your vacuum faster, cost less to operate and maintain because of unique design, sturdy construction and superior mechanical efficiency. Two types: SS for dry or semi-wet work to 5 mm.; RP for similar work up to 10 microns or better.



Write
for catalog.

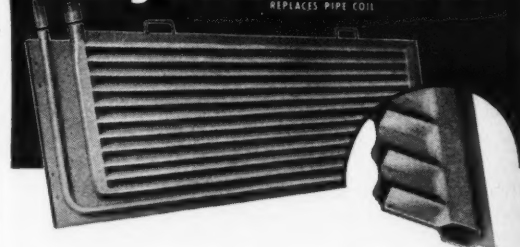
BEACH-RUSS COMPANY 46 CHURCH STREET • NEW YORK 7, N. Y.

When inquiring check CP 7224 on handy form, pgs. 2-3

PETERS-DALTON Inc.

**saves engineering,
fabricating, and
installation costs**

using **PLATECOILS**



Peters-Dalton, Inc., Detroit, Michigan, has found it is less costly to buy Platecoils than to fabricate their own pipe coils. Platecoils are installed in a fraction of the time without the complicated racks needed for pipe coils. They have also simplified engineering and estimating. Considerable time is saved by the standard charts of sizes and capacities.

Send for complete
technical manual and
descriptive Bulletin No. P54

PLATECOIL
Division
Tranter Mfg. Inc.
LANSING, MICHIGAN

When inquiring check CP 7225 on handy form, pgs. 2-3

CHEMICAL PROCESSING

**Fitting locks and seals
in any location**

Uses: In tube fitting applications, one of many uses is for sealing and adjusting immersion of tube into a vessel.

Features: Fitting is designed for locking and sealing in any location on tube.

Description: Assembly of Midlock tube fitting is simple, involving sliding of tube into fitting and tightening into desired position. Ferrule is deformed



Exploded view of fitting (top) and fitting on thermocouple protection tube

against tube and provides a seal without cutting into tube surface and without stress concentration. Fitting can be loosened and resealed repeatedly. Material used in unit is type 303 stainless steel.

(Tube Fittings are products of Conax Corporation, Dept. CP, 4515 Main St., Buffalo 21, N. Y. . . . or for more information check CP 7226 on handy form, pages 2 and 3.)

**Increased tungsten content
gives increased hardness
to high speed drills**

Additional tungsten gives high speed drills increased hardness. This can help in performing difficult drill jobs, manufacturer states. Serax high speed drills contain 18% tungsten, 4% chrome, and 1% vanadium.

(High speed drills are a product of Pyramid Drill Co., Dept. CP, 45 Radnor Road, Brighton 35, Mass. . . . or for more information check CP 7227 on handy form, pages 2 and 3.)

Correction notice

In the December 1953 issue of CHEMICAL PROCESSING (page 135) incorrect data was given concerning specifications of a pump, valve, and port assembly produced by Consolidated Vacuum Corp., subsidiary of Consolidated Engineering Corp., Dept. CP, 735 Ridge Rd. W., Rochester 3, N. Y. The following data are submitted as correct according to the manufacturer.

The MB-10 pump, valve, and port assembly produces an ultimate pressure of 2×10^{-4} mm Hg. Limiting forepressure of assembly is 0.5 mm Hg. Pumping speed of assembly is dependent upon size of tubulation which connects port to vessel being evacuated.

Wagner®
TRANSFORMERS
... the choice of leaders
in industry

**CHOOSE WAGNER
UNIT SUBSTATION
TRANSFORMERS**

*for always
dependable power...*

Here's dependability at work! This Wagner liquid-filled unit Substation Transformer feeds the catalytic unit at The Carter Oil Company refinery in Billings, Montana.

You'll find hundreds of Wagner Transformers, furnishing *always dependable* power, in spots where failure would incur great cost, because Wagner Transformers are known for their unfailing dependability—a reputation backed by more than sixty years of transformer building experience.

Wagner Unit Substation Transformers, both liquid-filled and dry-type, are carefully designed to meet distribution requirements. Both liquid-filled and dry-type unit substation transformers are built in ratings through 2000 kva, 15 kv and below—you can choose the type and rating that exactly meets your load-center distribution requirements.

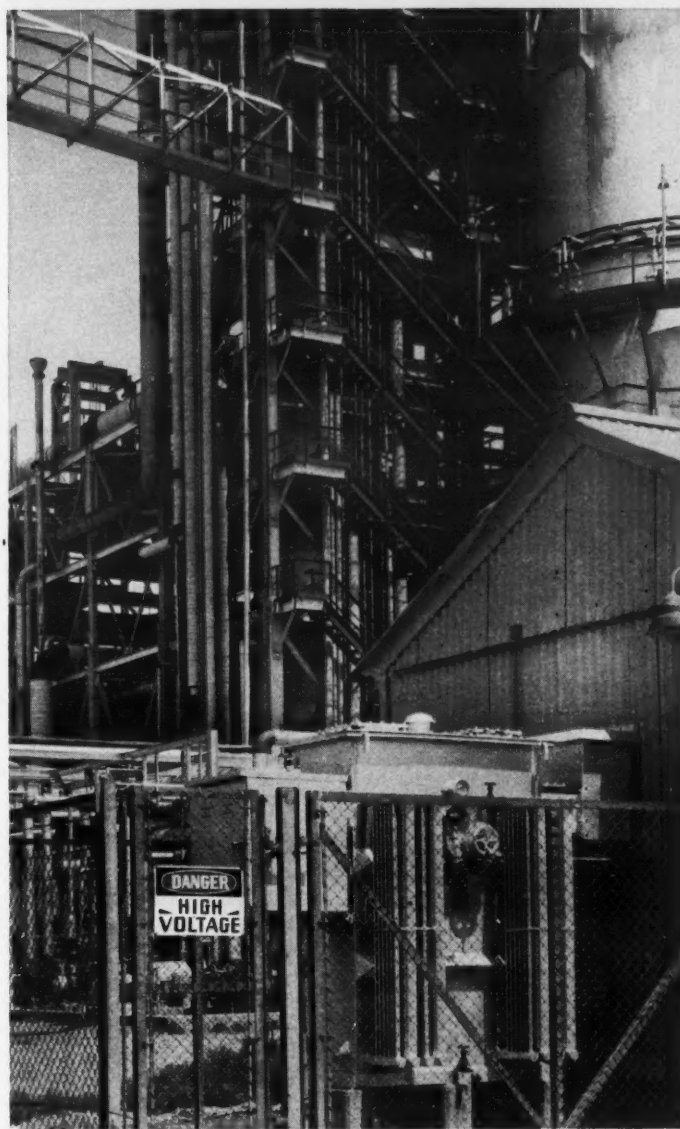
Bulletins TU-13 and TU-56 give full information. Your nearby Wagner engineer can help you solve your load-center problems. Call the nearest of our 32 branch offices, or write us.



T54-3

BRANCHES AND DISTRIBUTORS IN ALL PRINCIPAL CITIES

When inquiring check CP 7228 on handy form, pgs. 2-3



This 750 kva, 2400/4160Y to 480 volt, 60 cycle, three-phase, liquid-filled Wagner Unit Substation Transformer feeds the catalytic unit at The Carter Oil Company, Billings, Montana refinery. It is throat connected to switchgear in the adjoining building. Purchased and installed by The Fluor Corporation, Ltd., Engineers and Constructors for the Petroleum, Chemical and Power Industries, Los Angeles.

ELECTRIC MOTORS
TRANSFORMERS
INDUSTRIAL BRAKES
AUTOMOTIVE
BRAKE SYSTEMS—
AIR AND HYDRAULIC

WAGNER ELECTRIC CORPORATION
6359 PLYMOUTH AVE., ST. LOUIS 14, MO., U.S.A.

Where corrosion...temperature...pressure
cause other valves to fail . . .



THEY'RE "STICK-PROOF"

Operate Instantly...Everytime...Anytime

For more than 20 years, in practically every type of industry, HOMESTEAD LEVER-SEALDS have been giving trouble-free performance in services where extremes of temperature or pressure or corrosive line fluids cause ordinary valves to "stick" or "seize."

HOMESTEAD Lever-Seald PLUG VALVES are "Stick-Proof" because they're "Lever-Seald," which means that a powerful lever-and-screw device, built into every valve, assures positive action at all times under all conditions.

They operate fast, too—full open or closed by a quarter-turn; and because all operating parts are protected from line fluids, service conditions and weather, they last longer and cost less to maintain.

We make them in metals and alloys to suit your requirements in sizes 1½" to 12", for pressures from vacuum to 1500 lbs. and for temperatures ranging from 40° below zero to 1100° F.

**note these exclusive
HOMESTEAD
features**

- Instant Stick-Proof operation.
- Quarter-turn fully opens or closes.
- Positive seal without lubrication.
- Sealing surfaces always protected in both open and closed positions. Corrosion practically eliminated.
- Unobstructed straight-line fluid flow.
- All operating parts protected from damaging effects of service conditions and weather.

For Complete details and prices, write today for your copy of VALVE REFERENCE BOOK No. 39-3. No obligation.



HOMESTEAD VALVE MANUFACTURING COMPANY

"Serving Since 1892"

P. O. Box 140

Coraopolis, Pa.

When inquiring check CP 7229 on handy form, pgs. 2-3

MAINTENANCE

**Heat transfer up 50%
in totally-enclosed
DC motor . . .**

ventilation is independent of motor speed

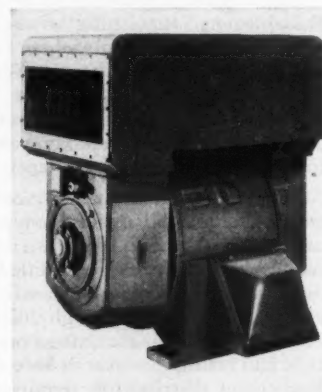
Uses: For use in severe atmospheres, motor finds application in paper, cement, chemical, rubber, and steel-mill industries.

Features: Totally-enclosed, unit-cooled DC motor has 50% greater heat transfer in a 37% smaller unit.

Compact cooling units, mounted completely within overall length and width of motors, permit operation at low speeds for long periods.

Description: A double system of blowers assures rapid cooling. One blower assembly forces cooling air from room through external passages of cooler, while the other forces internal motor air through closed internal passages of air cooler.

Blower motors, standard totally-enclosed, are for 3-phase 60 c power supply. Blower controller is a simple magnetic switch.



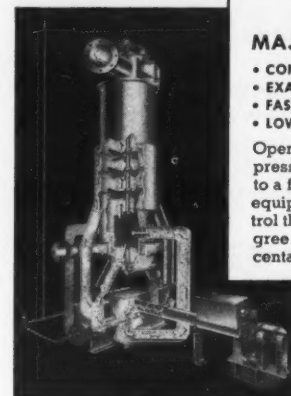
Cooling unit is mounted within overall dimensions

A thermostatic relay protects main motor in case of blower motor failure. Relay contacts can be arranged to cut off main motor or sound alarm. Located at commutator-end air duct, operating mechanism is accessible from outside.

Motors are available in ratings from 15 to 200 hp.

(DC motors are products of General Electric Co., Dept. CP, One River Rd., Schenectady 5, N. Y. . . . or check CP 7230 on handy form, pages 2 and 3.)

**IS PULVERIZING
on your program?**



**Find Out About
MAJAC JET PULVERIZERS**

- CONTROLLED FINENESS
- EXACT PARTICLE DISTRIBUTION
- FAST, CONTINUOUS PRODUCTION
- LOW MAINTENANCE COSTS

Operating by steam, gas or compressed air, the Majac Jet will grind to a fineness impossible with other equipment. In addition you can control that fineness to any desired degree . . . or provide for various percentages of different micron sizes.

Pilot plant test grinding, and custom grinding on contract basis, also available.

Write for New Bulletin Containing Complete Engineering Data.

Here is a partial list of materials which the Majac Jet has pulverized successfully:

Alumina • Aluminum Sulphate • Carbon • Ceramic Frit • DDT • Feldspar
Fungicide • Graphite • Gypsum • Iron Ore • Limestone • Mica
Paint Pigments • Plastics • Pumice • Quartz Sand • Silica Gel • Talc



INCORPORATED

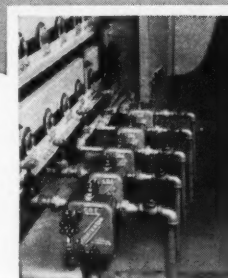
23rd ST. and P.R.R.

(Pittsburgh District)

SHARPSBURG, PA.

When inquiring check CP 7231 on handy form, pgs. 2-3

**In MODERN
Steam Traps, too**



**Gadgeteering
is a thing
of the Past**

A noteworthy example of improvement through simplification in steam specialties is to be found in Drainator—the modern steam trap.

All gadgets such as floats, valves, levers, etc., have been eliminated. The flow of condensate and non-condensable gases is ingeniously controlled by the thermodynamic properties of the condensate.

Elimination of these parts which cause breakdowns and necessitate repairs assures continuous operation at high efficiency and low cost.

Write for literature.

The COE MANUFACTURING CO.

503 BANK ST. PAINESVILLE, OHIO

When inquiring check CP 7232 on handy form, pgs. 2-3

CHEMICAL PROCESSING

Resistance temperature detector withstands rough usage . . .

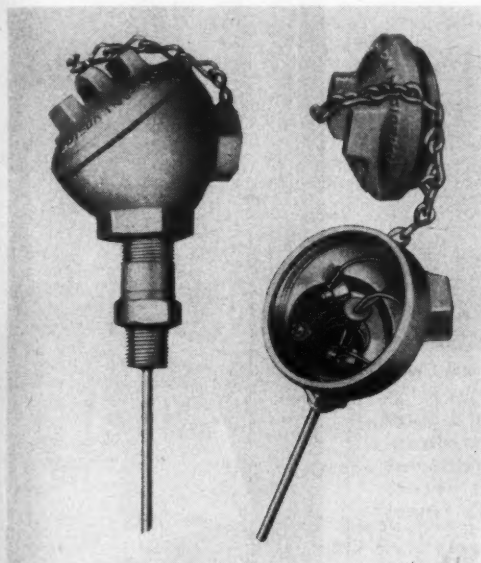
used with auxiliary equipment for temperature recording, indicating and monitoring systems

Uses: For detecting over-temperature, primarily on sleeve bearing motors.

Features: Detector element can be easily withdrawn by removing holder cap while leaving holder assembly in place.

Description: Tip-sensitive resistance temperature detector can be used with auxiliary equipment for temp recording, indicating, and monitoring.

Concentration of temperature-sensitive element in tube tip permits installation in sleeve bearings or against flush surfaces. Available in lengths up to



By removing cap, detector can be replaced without disassembly of holder

4 feet, with maximum diameter of .218 inches, it fits into waterproofed holder assembly and head. Detector element is withdrawn by removing holder cap, leaving holder assembly in place. Usable temperature range is from -70° to 300°C .

(Model 166KC detector is a product of Thomas A. Edison Inc., Dept. CP, West Orange, N. J. . . . or check CP 7233 on handy form, pages 2 and 3.)

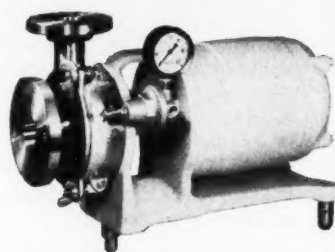
On the lookout for plant engineering equipment and supplies? . . .

Your task will be easier if you consult the alphabetical Product Directory, pages 214 to 217, for pumps, valves, electrical items, motors, etc. This is another Putman-style service provided in every issue.

Add longer life and greater economy



with
**TRI-CLOVER
WELDING
FITTINGS**



For top quality Centrifugal Pumps . . . be sure to investigate the many advantages offered through the use of Tri-Clover corrosion-resistant industrial pumps for an extremely wide range of applications. For complete details, write for new Catalog 253.

• Tri-Clover Butt Welding Fittings in Stainless Steel Type 304, 347, 316 and other analyses, are custom fabricated from highest quality materials by skilled craftsmen backed by years of specialized experience. Because of this quality, plus full corrosion resistance and longer life, the end result is greater economy in process line service.

Tri-Clover Zephyr[®] lightweight welding fittings are made in tube O.D. sizes from $\frac{1}{2}$ " through 24" and 36". Those through 4" are annealed, pickled and passivated. Larger sizes are annealed, and are passivated on request. Available in all standard fitting types.

Tri-Clover Schedule 5 and 10 welding fittings are made in a full line, for use with light gauge pipe in sizes from $\frac{1}{2}$ " through 24" and 36".

Schedule 40 welding fittings are available in sizes from $\frac{1}{2}$ " through 12". Information on request.

For stainless steel welding fittings for every process need, be sure to specify TRI-CLOVER.

See your nearest TRI-CLOVER DISTRIBUTOR

EXPORT DIVISION:
8 So. Michigan, CHICAGO, U.S.A.
Cable: TRICLO, CHICAGO

Tri-Clover[®]
MACHINE CO.

Kenosha, Wisconsin

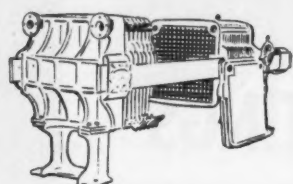
TRI-ALLOY AND STAINLESS STEEL
SANITARY FITTINGS, VALVES,
PUMPS, TUBING, SPECIALTIES

FABRICATED STAINLESS STEEL
INDUSTRIAL FITTINGS AND
INDUSTRIAL PUMPS

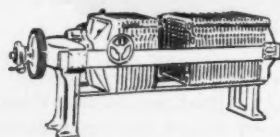
THE Complete LINE

I-154

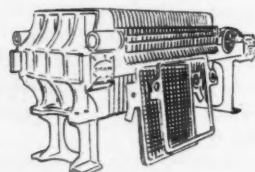
When inquiring check CP 7234 on handy form, pgs. 2-3



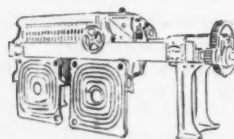
Filter to Recover Solids



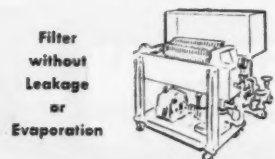
Clarify • Purify



Wash • Extract • Redissolve



Thicken • Leach



Filter without Leakage or Evaporation

Low First Cost — The Shriver Filter Press provides filtering capacity at low cost per square foot of filtering area.

Low Operating Cost — Easy to assemble and operate with unskilled labor. No complicated moving parts. Requires minimum floor space and head room.

Permanent High Value — Because of versatility, long service life, low depreciation and high resale value.

Portable — Smaller units can be made entirely portable, with press, pump and piping mounted on an easily movable base; larger units are easily taken apart and reassembled.

Use All Filter Media — Can use any cotton, synthetic fibre, asbestos, glass, wire mesh or other types of cloth or filter paper and any filter aids.

For Any Temperature • Pressure • Capacity — Can operate at any pressure to 1000 p.s.i. and at high or low temperatures. Any size to 10,000 G.P.H. and higher.

Corrosion Resistant — All parts of filter press which come in contact with material to be filtered can be made of any metal, wood, rubber, plastics, etc.

Write for Catalog No. 52

Filter Presses
Filter Media
Diaphragm Pumps

T. Shriver & Company, Inc.
846 Hamilton Street • Harrison, N. J.

When inquiring check CP 7235 on handy form, pgs. 2-3

ENGINEERING & MAINTENANCE

Wear-resistant surface of flooring withstands severest industrial use . . .

design, anchoring principle provide long life and non-skid protection

Uses: As an industrial flooring, particularly adapted to areas where wear is apt to be heavy.

Features: Floors are equally suitable for surfacing over new or old concrete, sound wood bases, wood block, or brick, with some variation in material selection in basic bedment grouting course in which plates find permanent anchorage.

Wear-resistance of floor is said to be result of sound anchoring principles provided by type of die stamping employed. Design also permits small protected islands of the grouting concrete bedment to surface and form an effective non-skid pattern.



Anchorage, non-skid design may be seen in metal tiles

Description: Metile floor consists of steel plates of approximately one sq ft embedded in specially installed concrete. Steel plate is so constructed that numerous anchorage points secure plate to concrete and prevent buckling or movement in either vertical or horizontal directions.

In laying, concrete is forced through small surface holes in metal tiles providing a grip area and eliminating slipping hazard.

(Industrial flooring is a product of Flash-Stone Co., Dept. CP, 3723 Pulaski Ave., Philadelphia 40, Pa. . . or for more information check CP 7236 on handy form, pages 2 and 3.)

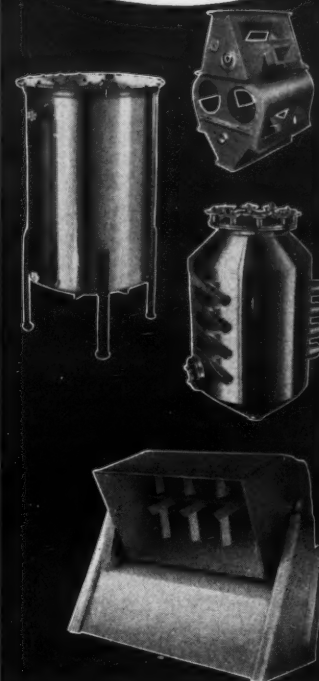
Products for process industry covered in 8-page bulletin

Concise data on process equipment is contained in illustrated catalog. Products included are: industrial insulation, refractories and insulating brick for furnaces, ovens and kilns, transite pipe, as well as industrial vent pipe, packings and gaskets.

Bul "Products for Process Industry" is issued by Johns-Manville, Dept. CP, 22 East 40th St., New York 16, N. Y. When inquiring specify CP 7237 on handy form, pages 2 and 3.

**LITTLEFORD
STAINLESS STEEL
AND ALUMINUM
FABRICATED PRODUCTS
FOR THE**

**CHEMICAL
INDUSTRY**



Fabricating Tanks, Bins, Vats, Troughs, Carts, or Special Units, Littleford offers its years of experience in producing quality products at low cost. Experience in shearing, bending, forming, and welding Stainless Steel, Aluminum, Nickel, Monel or other Alloy Metals plus skilled craftsmen is assurance of the finest workmanship. Littleford's modern facilities to produce non-corrosive units afford an unprecedented standard of dependability. If you need a product fabricated with accuracy, whether large or small, send blueprints to Littleford. See for yourself how it can be done the modern low-cost way.

FABRICATORS OF
PLATE AND
SHEET METAL
PRODUCTS
FOR INDUSTRY
SINCE 1882



LITTLEFORD BROS., INC.
417 E. Pearl St.
Cincinnati 2, Ohio

When inquiring check CP 7238 on handy form, pgs. 2-3

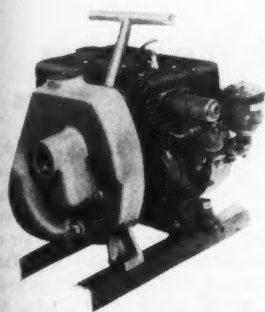
CHEMICAL PROCESSING

**Critical parts serviced
or replaced easily on
portable pump . . .**

unit features capacity of over 6000 gph with heads to 100 ft

Uses: For liquid transfer, fire fighting, dewatering pits and flooded areas.

Features: Automatic self-priming, gasoline-motor-driven, portable centrifugal pump delivers over 100 gpm at lowest head, and is capable of forcing water to a maximum height of 100 ft. High suction lift is assured — up to 25 ft. Unit has no valves or moving parts other than motor, pump impeller, and seal. These three critical parts are easily serviced or replaced.



Has suction lift to 25 ft

then securely tightened to shaft. Impeller is maintained in position by engine rotation. It may be removed simply by unscrewing it from shaft. Steel wear plate, adjacent to impeller face, is fastened to pump casing by carriage bolts terminated on outside by sealed dome nuts.

Intake and discharge connections are tapped for 1½" pipe thread. A pipe plug is provided for drainage in freezing weather. Unit is powered by 1½ hp engine. Complete outfit, including pump and engine, weighs only 65 lb.

(Portable pump is a product of Kenco Pump Co., Dept. CP, 1125 N. Ridge Rd., Lorain, Ohio . . . or check CP 7239 on handy form, pages 2 and 3.)

**Introduces nine developments
in lead clad metals**

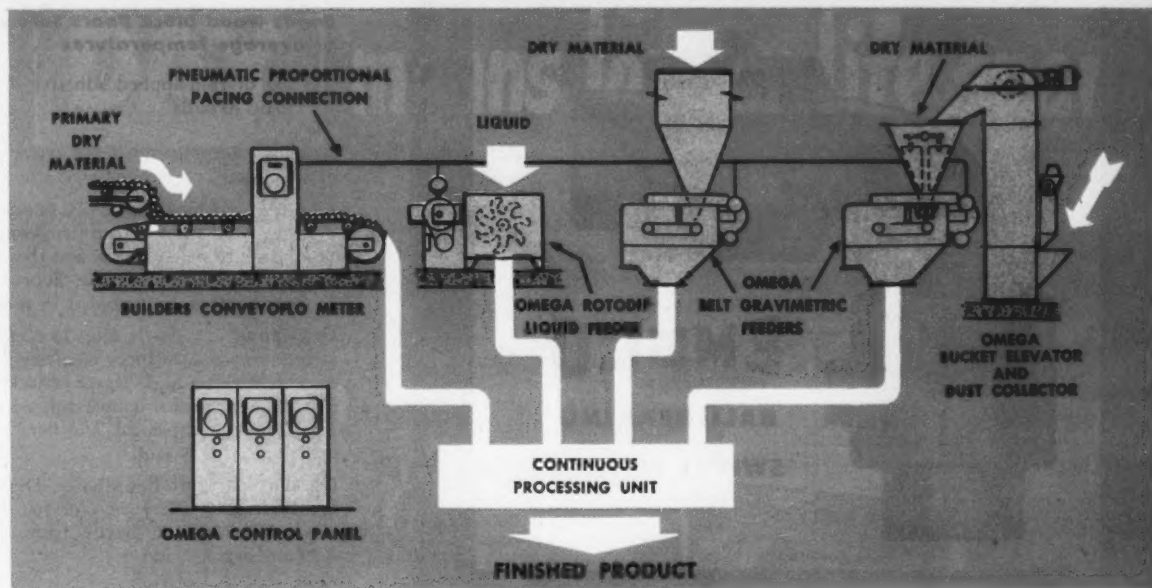
Pamphlet introduces manufacturer's recent developments in lead clad metals, products, and equipment. Detailed information is given on lead clad copper and steel anodes, steel immersion heater, lead-plate heater, pipe supporter, automatic lead cladding machine, lead putties, lead lubricant, and a conveyor belt idler and guide.

Pamphlet on nine clad metal developments is issued by Knapp Mills, Inc., Dept. CP, 23-15 Borden Ave., Long Island City, N. Y. When inquiring specify CP 7240, pgs. 2 and 3.

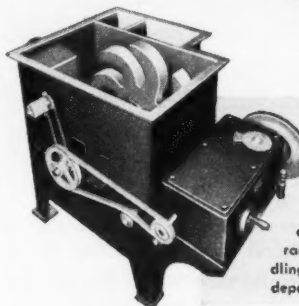
Description:

Pump Model 114, has an open-faced non-clogging type impeller. It will handle all solids passed by strainer at end of suction hose. Impeller is fastened directly to engine shaft without use of couplings, keyways, or other intermediate devices. It is positioned on threaded shaft by a spacer,

Another tough feeding problem solved by . . .

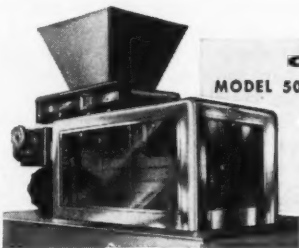


OMEGA — CONTINUOUS — processing!



**OMEGA
ROTODIP
LIQUID FEEDER**

— accurate within 1%
by volume — infinitely
adjustable over 100 to 1
range — adaptable for handling
corrosive liquids — simple,
dependable.



OMEGA
**MODEL 50-8 BELT GRAVIMETRIC
(WEIGHING) FEEDER**
— simple mechanical control — wide feeding range
— positive, non-flood rotor available for "floodable" materials — accurate within 1% over entire range specified.

OMEGA

B-I-F INDUSTRIES THE LAST WORD IN FEEDERS OMEGA

This Omega equipment package is the complete solution to a difficult feeding problem for a major food processing company. The Conveyor Meter weighs "non-flowable" materials — cohesive, fibrous fruits and vegetables — at high flow rates and with great accuracy. Pneumatic proportional pacing of Omega Dry and Liquid Feeders automatically keeps the flow of secondary materials in step with the primary flow . . . increases processing efficiency . . . insures uniform product quality under all conditions.

The extensive Omega line of Dry and Liquid Feeders is adaptable to all types of feeding and proportioning requirements. Omega equipment packages are complete in every detail; from control panel to auto-stop alarm devices, from hopper agitators to bucket elevators and dust collectors.

Send Coupon

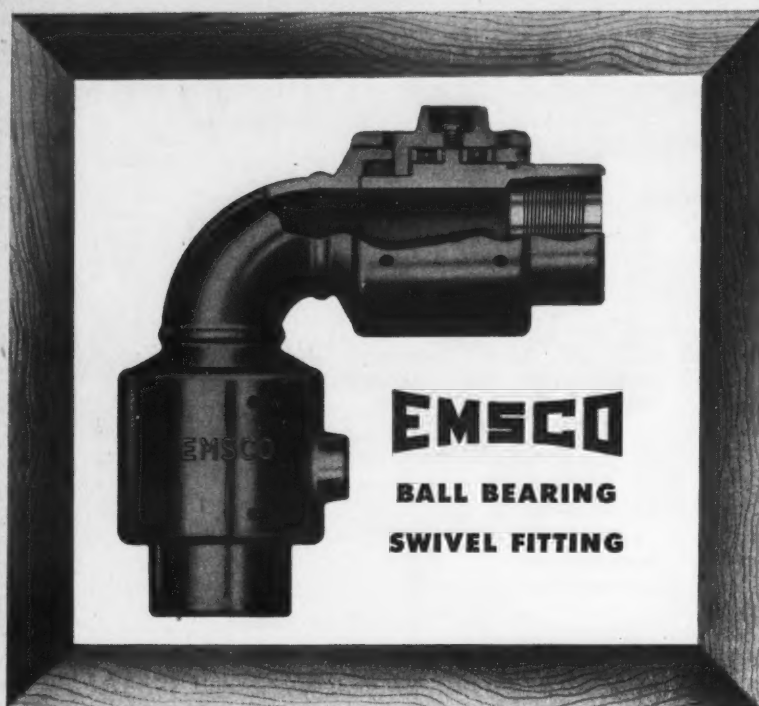
OMEGA MACHINE COMPANY
(Division of B-I-F Industries, Inc.)
387C Harris Ave., Providence 1, R. I.

Please send the following:

- ☐ Bulletin BIF-K7 describing this system
- ☐ Bulletin 35-G5A — Omega Belt Gravimetric Feeder
- ☐ Bulletin 65-H12 — Omega Rotodip Feeders
- ☐ Bulletin 550-H4A — Builders Conveyor Meter

Name _____
Company _____
Street _____
City _____ State _____

When inquiring check CP 7241 on handy form, pgs. 2-3

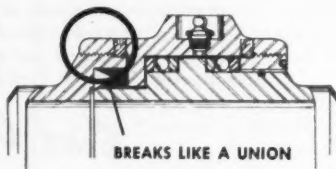


SIMPLICITY AND STRENGTH

Emsco combines every feature long desired in this, the finest development in Ball Bearing Swivel Fittings. Exceptionally easy turning under heavy pressure or physical loading is an outstanding advantage. Remarkable sealing against leakage and easy servicing when needed prolong the usefulness of these fittings. Backed by Emsco, this excellent product is available for all services in a complete range of styles and sizes.

EASY ACCESS TO PACKING CHAMBER

The packing of any Emsco Swivel Fitting may be readily removed from the Swivel Fitting Assembly without disturbing the rotating parts. This feature allows for the easy replacement of the packing element without breaking end connections.

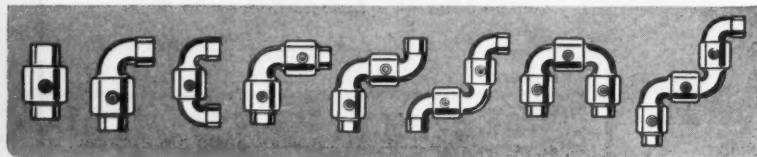


BREAKS LIKE A UNION

When making inquiries or when ordering, simply tell us the nature of your application, the fluid, temperature and type of end connections required. Complete information awaits you.

EMSCO MANUFACTURING COMPANY

BOX 2098, TERMINAL ANNEX
Houston, Texas LOS ANGELES 54, CALIF. Garland, Texas



When inquiring check CP 7242 on handy form, pgs. 2-3

ENGINEERING & MAINTENANCE

Bonds wood block floors safely at average temperatures . . .

use of cold-applied adhesive involves no fire or toxic hazards

Uses: Recommended for repair and replacement of end-grain and parquet-type wood block floors.

Features: Using product, it is said that production need not be disrupted with dangerous melting kettles and fumes from hot pitch, and that night work need not be undertaken to make floor repairs. No fire or toxic hazards are involved in use of adhesive.

Description: Bos'n No. 73 Cement is described as bituminous substances emulsified by special processes to impart a high degree of tackiness to the dried film at atmospheric temperatures. Application rate is 20 to 40 sq ft per gal, and floor can be put to use immediately, it is said.

(Product of Smith-Bercall Co., Dept. CP, 71 Grove St., Paterson 3, N. J. . . or for more information check CP 7243 on handy form which is located between pages 2 and 3.)

Permits positive, visual setting of valve clearance on overhead valve engines . . .

hydraulic valve lifters can also be checked

Uses: For setting valve clearance, or "gap", on engines with overhead valves.

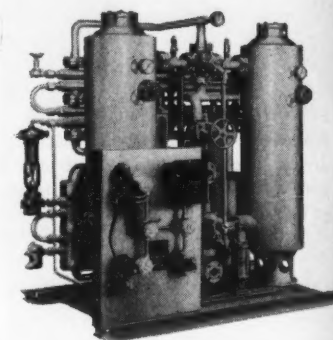
Features: Unit measures travel of valve rocker arm prior to contact with valve stem. This measurement is transmitted to a dial indicator gage graduated in thousandths of an inch. Easy-to-read dial permits a positive, visual setting of valve clearance regardless of wear or pitting of valve rocker arm.

Hydraulic valve lifters can also be visually checked with this instrument. Unit, called Valve Gapper, is placed on valve rocker and with engine running, smallest gap will register.

Description: Models are available for most gas and diesel engines with overhead valves. Special model designed for GM diesel engines has a triple use. In addition to setting valve gap, this model permits visual timing of injectors, and balancing of fuel injector racks by engine operators as well as skilled mechanics. Dial indicator is said to show most minute variations in settings.

In setting valve gap, unit is quickly positioned on valve rocker arm with base resting on valve keeper, and movable bracket hooked securely on rocker arm. As rocker arm moves toward valve stem, bracket moves with it until contact is made. Movement is registered on dial indicator. As soon as rocker arm contacts valve stem, entire tool moves downward with valve. Only movement registered is that of rocker arm prior to contact with valve stem.

(Valve clearance instrument is a product of P & G Mfg. Co., Dept. CP, 2262 N. Albina Ave., Portland 12, Ore. . . or for more information check CP 7244 on handy form, pages 2 and 3.)



* IT ELIMINATES MOISTURE PROBLEMS

This dependable Pritchard dehydration unit—a packaged dryer proved efficient in all types of industrial, processing and laboratory installations—reduces moisture content of air or other gases to desired dew points. That eliminates a lot of your moisture problems . . . gives you a good reason for owning a HYDRYER*. There are other good reasons, all of which will save you money.

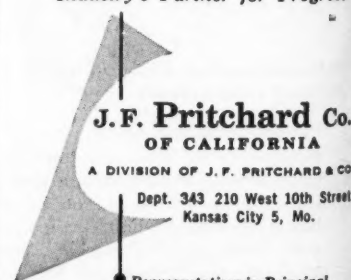
Here are examples: A HYDRYER will eliminate costly plant and equipment shutdowns due to moisture and ice; it will protect precision instruments and controls; it will reduce corrosion, line losses, flow stoppages.

*Registered Trade Name

To find out all about HYDRYERS . . . and the many ways they can benefit you . . . write for your copy of Pritchard's new HYDRYER bulletin, No. 16.0.081.



Industry's Partner for Progress



Representatives in Principal Cities From Coast to Coast

COOLING TOWERS • SPECIALIZED HEAT EXCHANGERS • GAS & AIR TREATING EQUIPMENT

When inquiring check CP 7245 on handy form, pgs. 2-3

CHEMICAL PROCESSING

MAINTENANCE

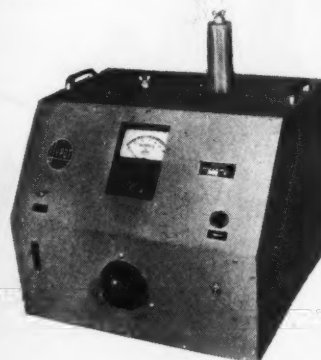
Tests motors, cables to 30,000 v AC, yet is portable . . .

two men can handle 178 lb unit

Uses: For testing of motors, cables, transformers, insulators, etc.

Features: Designed for testing up to 30,000 v AC, 178 lb unit can be handled by two men.

Description: Model 573A Hypot provides AC output voltage continuously variable from 0 to 30,000 v at 1 kva capacity (1.5 kva intermittent). Input is 115 v, 50-60 c.



Handles aid portability of tester

Short circuit protection is provided by a manually reset primary circuit breaker with secondary trip. Excess leakage current in test circuit is indicated by panel-mounted neon lamp.

Included in unit are a 4 1/2" output voltmeter connected directly across secondary (so that output voltage indication is not dependent on transformer design for accuracy), on-off switch with pilot light, non-locking "push-to-test" button, high voltage stand-off insulator and ground terminal on top of case.

Instrument is housed in a grey wrinkle-finish steel case 21 x 16 x 18" high.

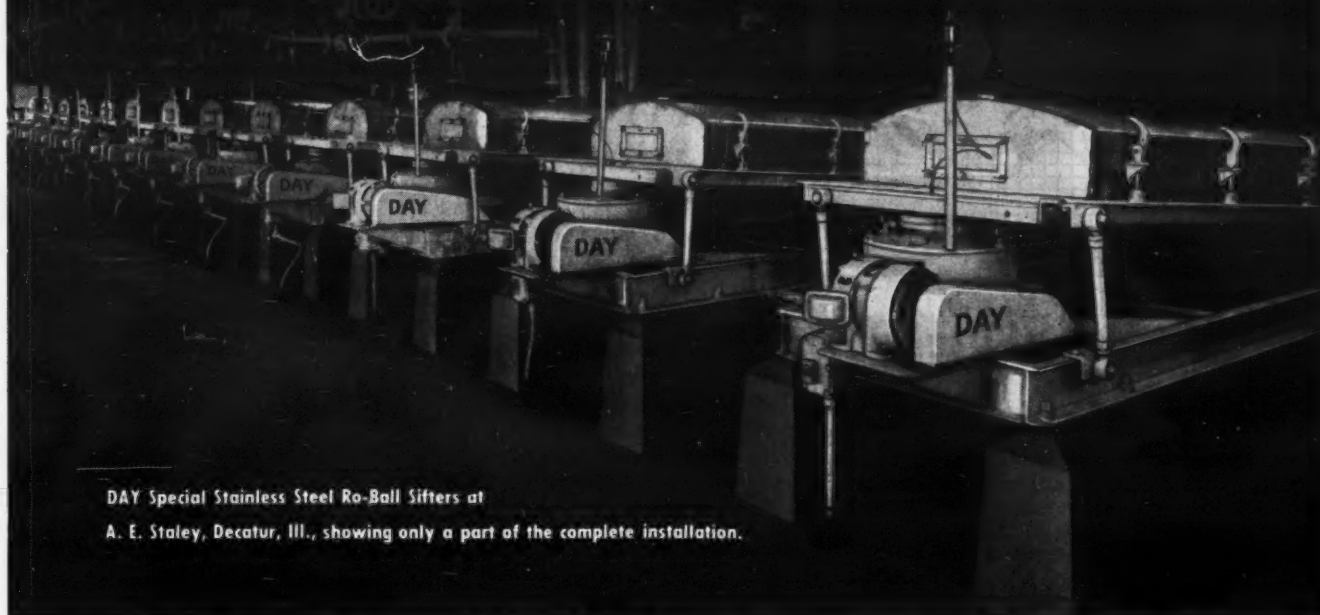
(Tester is a product of Associated Research Inc., Dept. CP, 3758 W. Belmont Ave., Chicago 18, Ill. . . . or for more information check CP 7246, pages 2 and 3.)

For more information on product at right, specify CP 7247 . . . see information request blank between pages 2 - 3.



DAY

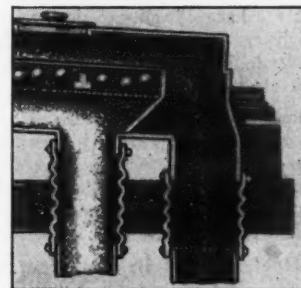
means longer life span



DAY Special Stainless Steel Ro-Ball Sifters at

A. E. Staley, Decatur, Ill., showing only a part of the complete installation.

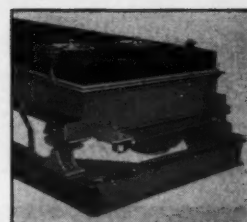
* Extra long life for your equipment is assured by DAY's unmatched ability to combine rugged construction with precision engineering. An impressive list of users have found this true of the DAY Ro-Ball Sifter, which accomplishes 100%



SUPER-ACTIVE BALL CLEANING DEVICE

elimination of foreign material and ideal aeration. Key to its outstanding performance is the Super-Active Ball Cleaning Device. Scores of rebound points are provided in each compartment, resulting in even vibration over the entire screen surface. The extremely fine mesh stays clean and open, allowing free passage without crushing or forcing.

Dust-proof Inspection Ports, with cast aluminum rim and cover, are precision-fitted. For complete information on these and many other features—including self-aligning tail end bearings, stabilizing drag link, and stabilizer to prevent rocking—simply call your nearest J. H. Day field engineer or write us direct for Bulletin.



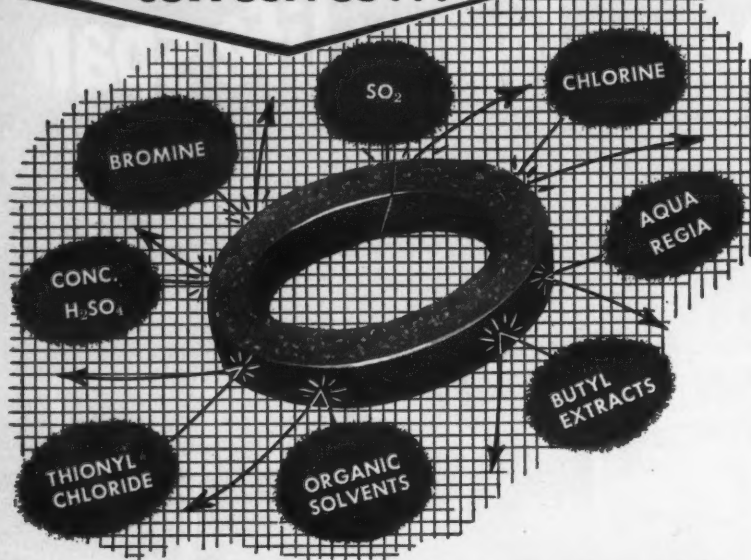
SELF-ALIGNING TAIL END BEARINGS

when you buy **DAY** you buy dependability

THE J. H. DAY COMPANY
INCORPORATED
1141 HARRISON AVENUE, CINCINNATI 22, OHIO

PRODUCERS OF QUALITY EQUIPMENT FOR BAKING • PAINT & VARNISH • CHEMICAL RUBBER • PHARMACEUTICAL • COSMETICS • PAPER & PULP • EXPLOSIVES • FOOD CERAMICS • CANDY • SOAP • SUGAR • MILK PRODUCTS • OTHER MAJOR INDUSTRIES

If you pump these
corrosives...



Get months of Trouble-Free service with CHEMPRO TEFLON PACKINGS

If your pumps and valves handle highly corrosive industrial chemicals, CHEMPRO TEFLON PACKINGS will drastically cut packing replacement and maintenance costs. CHEMPRO Packings last for many months under corrosive conditions which make ordinary packings useless in days or even hours. They stop leakage by providing a tight seal at only slight gland pressure, and their very low coefficient of friction often makes lubrication unnecessary.

TEFLON* PLASTIC STUFFING BOX PACKING

Ideal for either centrifugal or reciprocating pumps operating at speeds up to 3600 R.P.M. handling corrosives at temperatures from -118° F. to 525° F. Style No. 101 composed of 94% shredded Teflon and chemically inert graphite as a friction reducer. Style No. 201 same as No. 101 except that mica is used as friction reducer. Both styles made to fit every size stuffing box on standard process equipment.

TEFLON V-TYPE PACKINGS

For reciprocating pumps and hand, air and motor operated valves handling corrosive materials. Lips of very sensitive pressure rings expand proportionately to increased operating pressure thereby preventing leakage. Suitable for temperatures from -150° F. to 550° F. Unsuitable for centrifugal or rotary pumps. Supplied in bulk or in complete sets to fit specific stuffing boxes.

Chemical & Power Products engineers are packing and gasket specialists with complete fabricating facilities to meet your specific requirements. Write for our complete Teflon Packing and Gasket Catalog.

*du Pont Trademark

CHEMICAL & POWER PRODUCTS, INC.
The Original Fabricators of Teflon Packings and Gaskets

9 Broadway, New York 4, N. Y.

When inquiring check CP 7248 on handy form, pgs. 2-3

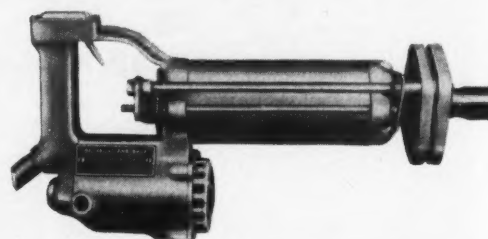
ENGINEERING & MAINTENANCE

Power-plus rotation drills concrete and masonry fast...

3600 blow/min action of hammer turns drill bit

Uses: For drilling up to 1 1/2" diam holes in concrete and masonry.

Features: Electromagnetic hammer drill combines power of manufacturer's standard hammer with rotation of a spiral-fluted, carbide-tipped drill bit. Automatic rotation is accomplished by simple rubber ratchet mechanism which utilizes recoil of each blow of hammer piston to turn bit slightly. Thus, the 3600 blows/min of hammer piston rotate bit with considerable torque at right speed.



Principle of operation reduces operator fatigue

Description: Operation of hammer, Model 23-RO, is from 110 v, 60 c AC; 220 v units can be supplied on order. Drills are available in a variety of hole diameters.

(Drills are a product of Syntron Co., Dept. CP, Homer City, Pa. . . or for more information Check CP 7249 on handy form, pages 2 and 3.)

Weight and moisture build-up cut by plastic doors developed for insulated trucks...

large "walk-in" section weighs only 55 lb, allows clearance down to 1/16"

Uses: Developed for use on insulated trucks.

Features: Large "walk-in" door of this construction weighs 55 lb, about 1/3 the weight of a metal and wood door. Hardware and aluminum facing brings weight to about 75 lb.

Low water absorption of reinforced plastic, which prevents swelling or shrinking, permits door and frame to be molded with only 1/16" clearance. This minimizes moisture build-up around door edges, and helps prevent accumulation of ice which often freezes door to frame.

Description: Doors are molded in a single pan-like section. Pan is then filled with insulation and faced with a sheet of aluminum on which the necessary hardware is attached. Frames, or "bucks" for doors are also made of same reinforced plastic construction. Materials used are Fiberglas and Vibrin, a polyester resin produced by Naugatuck Chemical Div., US Rubber Co.

Other advantages claimed for doors include no rot-

PUMP STUFFING BOXES

INFORMATION
suggesting solution
of common stuffing
box difficulties;
available in newly
revised
BULLETIN S-147

Fig.
19,488



Number of rings, depth
of box, type of pack-
ing... chemical and
physical properties
of the fluid being
pumped, speed of
shaft and other
pertinent facts are
in this Bulletin.

WRITE on business stationery for your
copy of Bulletin S-147.

TABER PUMP CO. (Est. 1859)
320 ELM ST. • BUFFALO 3, N. Y.

Fig. 6041



TABER

When inquiring check CP 7250
on handy form, pgs. 2-3

CHEMICAL PROCESSING

ting, no odor absorption, easy cleaning, no damage from steam cleaning, and strength to stand heavy impacts. Doors, which are available in many sizes, are impregnated white for sanitary reasons.

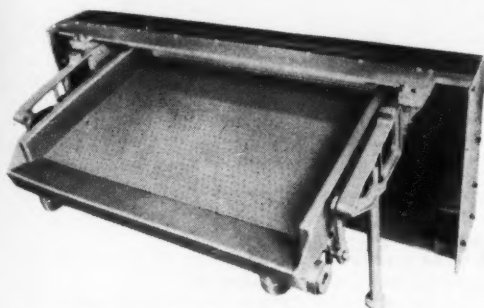
(Plastic doors are a product of Americana Enterprises, Dept. CP, Stamford, Conn. . . . or for more information check CP 7251 on handy form, pages two and three.)

Output of boilers upped 15% by burner for automatic anthracite firing

Uses: For conversion of existing steam and hot water boilers to automatic anthracite firing.

Features: Increase of 15% or better in output is said to result from design which circulates water through burner to boiler. Heating capacity of one sq ft of active burner area is equal to five sq ft of prime boiler surface.

Description: Fire-Jet consists of a burner installed inside the boiler and gravity-fed with coal from hopper located on outside. A standard 1750 rpm motor



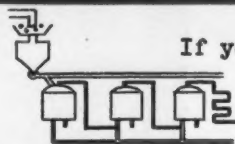
Burner has 256 injection jets per sq ft of surface to assure ample supply of air to fire bed

drives a fan which forces air through tuyeres (burner injector jets) in burner, and also supplies power for mechanism which oscillates burner periodically and distributes coal evenly over fire-bed surface.

Tuyeres number 256 per sq ft of burner area and supply air to fire bed. Once adjusted, no further air control is necessary.

Burner is furnished in ten standard sizes with length varying from 30 to 84" in increments of 6". The 30" unit has an EDR rating of 3600 sq ft of steam and 5760 sq ft of water; 84" unit has a rating of 10,350 sq ft of steam and 16,560 sq ft of water. In many instances, multiple installations of burners may be made in a single boiler, thus doubling, tripling, or quadrupling output ratings and extending limits of burners to largest heating loads, according to manufacturer.

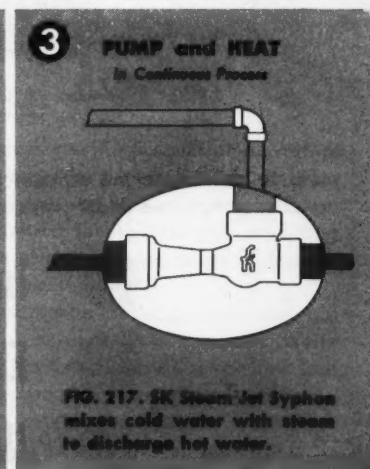
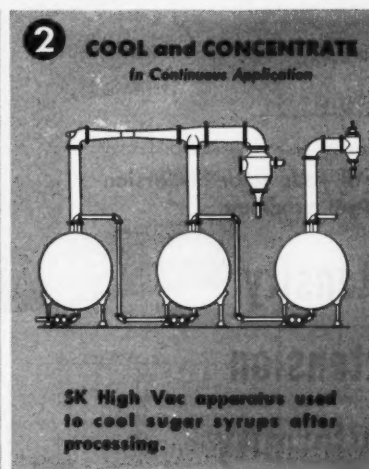
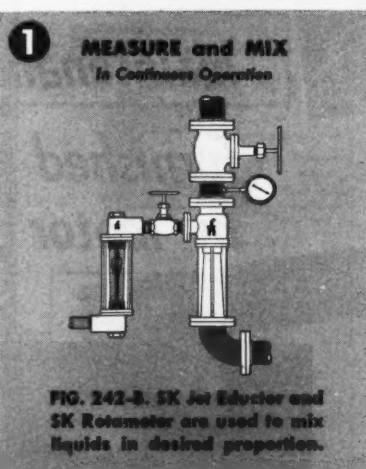
(Anthracite burners are a product of Electric Furnace-Man, Inc., Dept. CP, Emmaus, Pa. . . . or for more information reader may simply check CP 7252 on handy Reader Service slip located between pages two and three.)



If you plan, supervise, or maintain continuous process operations, consider the suitability of **SK** Jet Apparatus for such operations. For jet apparatus, though it requires skill in designing, is

outstandingly simple — has three principal parts which include: a converging nozzle for liquid actuated jets, or an expanding nozzle for gas actuated jets, a tail or diffuser, and a body to hold these parts in their proper relative positions.

Jet apparatus fits right into the pipeline. The actuating medium can be either liquid or gas. Small, in relation to the work they do, easy to install and maintain, one of many SK Jet Types can be used to:



and (4) to perform thousands of similar jobs in plants all over the country. For types of Jet Apparatus offered by SK and a summary of applications, write for Bulletin SK-1.

Representatives
in
Principal Cities

SCHUTTE and KOERTING Company
22 STATE ROAD • CORNWELLS HEIGHTS • BUCKS COUNTY, PA.



When inquiring check CP 7253 on handy form, pgs. 2-3



The "Entoleter" Impact Mill can assure you complete dispersion . . . compact installation . . . simplified maintenance . . . and will process up to 25 tons per hour!!!

Whether you use

$$\gamma = \frac{2.3 \log_{10} \frac{I_0}{I_s}}{t}$$

to determine the efficiency of your color dispersion or not . . . we know you can get maximum . . .

- Intensity
- Extension
- Uniformity

with the "Entoleter" Impact Mill. May we process a sample of your product for your evaluation?

The trademark "ENTOLETER" is your guarantee of complete satisfaction

ENTOLETER DIVISION
The Safety Car Heating and Lighting Company, Inc.
1185 Dixwell Ave., New Haven 4, Connecticut

When inquiring check CP 7254 on handy form, pgs. 2-3

*engineering
and maintenance*



Fig 1—Pilot plant operation represents typical equipment on which motor starters are used

maintenance-free service

***furnished for 12 years
by motor starters***



Fig 2—Attractive appearance of enclosure lends itself to panelboard installation, such as this one located in penthouse of building at G. D. Searle & Co.

G. D. Searle's favorable experience with controls results in practically 100% use of same type in company's new research building

Problem: G. D. Searle & Co., Skokie, Ill., required motor starters that would permit uninterrupted production of pharmaceutical products.

Solution: When company moved into its present plant in 1942, Bulletin 709 Solenoid Starters and similar units were extensively used. Both non-explosion proof and explosion-proof types are in service. As additional facilities were added, motor starters of same type were used, new

research building being practically 100% equipped in this manner.

Bulletin 709 starters have serviceable cadmium silver alloy contacts. Oxides which form on contacts are good electrical conductors. Control has only one moving part. With simple up and down solenoid motion, contact rebound is almost entirely eliminated.

Double break contacts provide for high arc rupturing capacity. Enclosure for contacts confines the arc, insuring against flashover. High magnetic efficiency results in a low drop-out and low pick-up voltage. Unit has reliable overload protection. Although enclosure is compact, interior of case has ample room for ease of wiring.

(Continued on page 165)

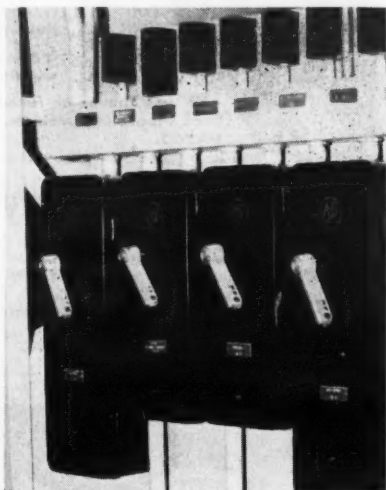


Fig 3—Bul 712 Automatic Combination starters, such as these controlling equipment in packaging department, can be closely connected

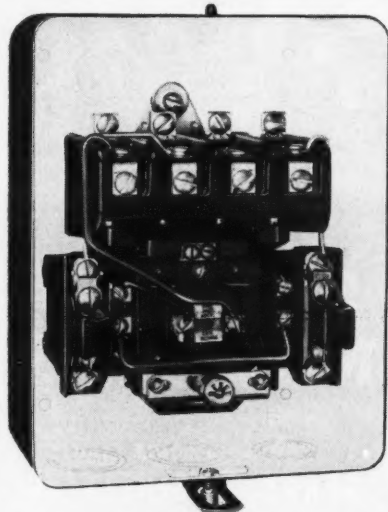


Fig 4—Construction of contacts permits continuous starting and stopping 20 to 30 times per minute for indefinite periods without need for maintenance

COOKING KETTLES

Style C
Two-thirds Jacketed
5 to 100 gal.

Style A
Two-thirds Jacketed
5 to 500 gal.

Style B
Full Jacketed
10 to 300 gal.

Style CW
Two-thirds Jacketed
80 to 300 gal.

Pressure
Kettle
Two-thirds
Jacketed
40 to 200 gal.

MIXING AND BLENDING UNITS

CW3T
Center-line Scraper
Agitator Kettle
80 to 300 gal.

A3T
Center-line Scraper
Agitator Kettle
25 to 300 gal.

Vacuum Pan
50 to
300 gal.

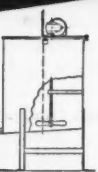
Quick Cooling Pan
50 to 200 gal.

These
LEE Units
WILL REDUCE YOUR
PROCESSING COSTS!

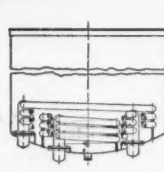
Individually designed for a specific processing operation and available in a wide range of sizes to fit your exacting requirements, Lee corrosion-resistant equipment is built to give you long years of peak performance with minimum maintenance.

Descriptive bulletins are available for any or all of the above units. Write for them today and discover how Lee can help reduce your processing costs.

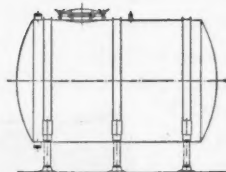
MIXING, COOKING & STORAGE TANKS



Mixing Tank
25 to 500 gal.



Pulp Tank
500 to 2,000 gal.



Storage Tank
100 to 5,000 gal.

LEE METAL PRODUCTS CO., INC.
418 PINE STREET,
PHILIPSBURG, PA.

ALL LEE KETTLES ARE MADE TO A.S.M.E. CODE

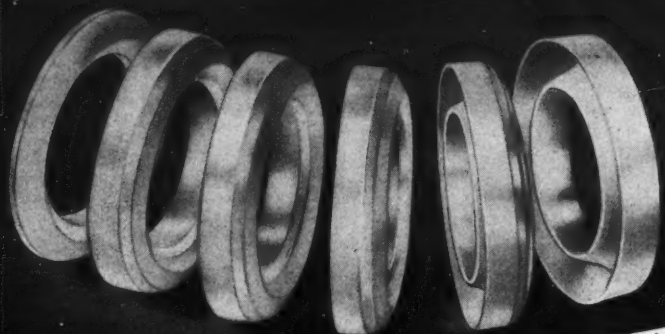
When inquiring check CP 7255 on handy form, pgs. 2-3

acids... gases... hot liquids...

SOLVE YOUR SPECIAL PACKING PROBLEMS..

WITH JOHN CRANE

CHEMLON
"C-V"
RINGS



MADE OF
Teflon

for CORROSION-FREE PACKING SERVICE IN PUMPS AND VALVES....

You can effectively handle any corrosive liquid or gas by re-packing your valves and pumps with "John Crane" Chemlon "C-V" Rings. Molded from the remarkable material, Teflon, "John Crane" Chemlon "C-V" Rings are impervious to almost every known chemical substance. They withstand extreme temperatures from -94° to +482°F—have extremely low friction coefficient. "Breakout" friction is only slightly higher than that of running friction. Special cross sectional design affords positive sealing at practically finger-tight gland pressure.

To bring you all the important advantages of Teflon for your particular sealing problem or application, "John Crane" has developed a complete line of Chemlon "C-V" Rings and male and female adapters. If you have special requirements, additional sizes can be molded to fit your stuffing box dimensions.

"John Crane's" illustrated booklet "The Best in Teflon" contains extensive information on a wide variety of Chemlon Products. Send for your free copy. Crane Packing Co., 1821 Cuyler Ave., Chicago 13, Ill.



*DuPont's trademark for tetrafluoroethylene resin

JOHN CRANE
CRANE PACKING COMPANY

When inquiring check CP 7256 on handy form, pgs. 2-3

MAINTENANCE

Variety of uses featured by wire-reinforced hose

Uses: For multi-purpose work, where extreme flexibility and resistance to high pressures is required.

Features: Hose can be used as an air, oil, water, gasoline, or spray hose, and even for hydraulic lines at working pressures as high as 1500 psi.

Description: Made with a non-porous oil resistant tube, this hose is reinforced with two separate braids, one of steel wire and one of rayon. Steel wire braid is grounded to provide a positive conductor for static electricity. Cover is made of



Hose is reinforced with two braids, one of steel wire and one of rayon

thick, tough oil-proof Neoprene, and is colored bright yellow so hose can be seen in dark places.

Available with either high pressure re-attachable or pressed-on hydraulic fittings, hose is made in 3/8 to 2" ID sizes.

(Ironsides Utility Hose is a product of Quaker Rubber Corp., Div. of H. K. Porter Co., Inc., Dept. CP, 4915 Comly St., Philadelphia 24, Pa. . . or for more information check CP 7257 on handy form, pages 2 and 3.)

Handy tool calculates weld strengths

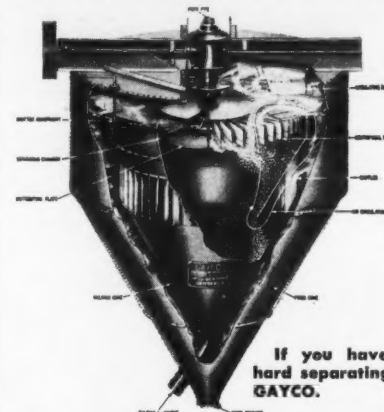
Plastic slide-rule type weld strength calculator indicates both size of weld required for a given applied load and weight of a given length of weld in lb. Values range from 2000 to 20,000 psi for stresses and from 9000 to 450,000 lb for applied loads. Reverse side contains basic design data for welded connections and formulas for calculating nominal properties of welded connections.

Calculator is issued on letter-head request to Marketing Service Dept., Lukens Steel Co., Dept. CP, 611 Lukens Building, Coatesville, Pa.

GAYCO CENTRIFUGAL SEPARATORS

GAYCO Separators, equipped with the adjustable centrifugal sizing fan — an exclusive GAYCO feature — make closer separations. Closer separations bring about higher production through efficient removal of the fines made by the mill. Closer separations bring about higher quality products by eliminating all undesirable oversize.

"TIMKEN BEARING EQUIPPED" GAYCO brings you all these:



Range 60 to 400 mesh
greater capacity
25 to 30% greater production
Cleaner Tailings
Uniform Products
Slow speed for slow wear
Quick and easy adjustments

If you have an exceptionally hard separating problem, TRY THE GAYCO.

Universal Road Machinery Co.

Rubert M. Gay-Division
Factory and Laboratory, Kingston, N. Y.
117 LIBERTY STREET NEW YORK 6, N. Y.
Canadian Representative: F. H. Hopkins & Co., Ltd.,
8500 Decarie Blvd., Montreal, Que.

When inquiring check CP 7258 on handy form, pgs. 2-3

SPRACO NOZZLES

Write for NOZZLE CATALOG to
SPRAY ENGINEERING CO.
125 CENTRAL STREET • SOMERVILLE 45, MASS.

When inquiring check CP 7259 on handy form, pgs. 2-3

(Continued)
Results: finished f...
Practical...
This per...
some of...
in which...
times a...
once a y...
Although...
starters...
with the...
have an...
connecte...
board ins...
(Bul 709...
are manu...
136 W...
or check

Pushbutt...
cuts mal...
90% cle

Uses:...
plants, off...
Features:...
pushbutton...
cleaning...
eliminate

Description:...
lector-plat...
trating h...
tached to



Power p...
units are

Electric Co...
ville St., I...
check CP

(Continued from page 163)

Results: Trouble-free operation has been furnished for as long as 12 years by the motor starters. Practically no maintenance has been necessary. This performance has been achieved in spite of some of the controls being subject to operations in which starting and stopping occurs 20 to 30 times a minute all day. Each starter is checked once a year under the plant maintenance program.

Although company has had many types of motor starters, plant supervisors are particularly pleased with the Bulletin 709 and similar type units. They have an attractive enclosure which can be closely connected. They lend themselves nicely to panel-board installation.

(Bul 709 Solenoid Motor Starters and similar units are manufactured by Allen-Bradley Co., Dept. CP, 136 W. Greenfield Ave., Milwaukee 4, Wis. . . . or check CP 7260 on pages 2 and 3.)

Pushbutton spray-washing of air cuts maintenance costs, gives 90% cleaning efficiency

Uses: For air-cleaning applications in industrial plants, office buildings, food processing plants.

Features: Combining 90% efficiency with a simple pushbutton method of spray-washing, electronic air-cleaning unit is said to cut maintenance costs and eliminate inside-the-duct washing of cells.

Description: Accumulated dirt on electronic collector-plate surfaces of unit is flushed away by penetrating hot water from needle-spray nozzles attached to motorized header.

After moving slowly across unit's face, header automatically reverses and returns to start position. Same traveling header applies an adhesive oil to collector-plate surfaces when washing is completed. Oil binds collected dirt together and acts as a solvent for wash operation.

Height and width of PX Precipitron unit depend on cleaning requirements of a proposed system. Power packs and control units are located outside duct.

(Electronic air-cleaning unit is a product of Westinghouse



Power packs and control units are located outside the duct

Electric Corp., Sturtevant Div., Dept. CP, 200 Readville St., Hyde Park, Boston 36, Mass. . . . or check CP 7261 on pages 2 and 3.)



background photo courtesy of Shell Oil Company

J-M CHEMPAC—an asbestos-Teflon packing that withstands virtually ALL chemicals

THIS NEW Johns-Manville development combines the sealing action and heat-resistant characteristics of asbestos with the all-around chemical resistance of Teflon. Its base is strong, resilient asbestos fibers thoroughly impregnated with chemically inert Teflon.

The versatility of Chempac greatly reduces the number of packing styles needed for chemical equipment. Stocking presents no problem because its inert ingredients do not deteriorate.

Chempac can be recommended for packing pump rods or shafts, valve stems, agitator shafts, expansion joints, rotary filters and similar apparatus. It is outstanding in service against many acids, alkalies, caustic solutions,

and solvents, at temperatures to 525° F.

Chempac Packing is available in coil, spiral and ring form for rod, plunger and valve stem service. Style Nos. 2011, 2012 and 2013 are made of white Canadian Chrysotile Asbestos. No. 2014 is made of blue African Crocidolite Asbestos. Johns-Manville also makes Chempac Gaskets, Nos. 117 and 138 of plies of asbestos cloth treated with Teflon.

Your Johns-Manville Packing Distributor can help you select the right Chempac Packing or Gasket for your application. For complete information write him or Johns-Manville, Box 60, New York 16, N. Y. In Canada, 199 Bay Street, Toronto 1, Ontario.



Johns-Manville PACKINGS & GASKETS

When inquiring check CP 7262 on handy form, pgs. 2-3

HERE'S THE ANSWER TO YOUR ACID HEATING OR COOLING PROBLEM..



NEIL 1277 SHELL AND TUBE EXCHANGER
WITH NOCORDAL® TUBES

PUT NOCORDAL®

IMPERVIOUS GRAPHITE
HEATING AND COOLING
UNITS TO WORK FOR YOU

1. LONGER SERVICE LIFE

Nocordal is Practically Inert to Most
Strong Acid Solutions.

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Pre-Engineered Standard Units Available
in Field Testing Designs.

3. LOWER OPERATING COST

Superior Heat Transfer Characteristics
Coupled with Efficient Design.



STEAM JET
AGITATOR



IMMERSION GRID UNIT

STANDARD DESIGNS AVAILABLE FOR

- SHELL AND TUBE
- IMMERSION COILS
- ELECTRIC UNITS
- JET AGITATORS

Write Today
For
Illustrated
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Representatives in all Principal Cities
Other Neil Products Include: Lined Steel Pipe • Acid Proof
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NEIL PROCESS EQUIPMENT
CORPORATION

12901 Slawood Avenue • Cleveland 11, Ohio

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ENGINEERING & MAINTENANCE

**Make available thin gages
and close tolerances in
phosphor bronze . . .**

strip from 0.0005 to 6" wide is held to within
 ± 0.0001 " thickness

Uses: In the chemical, food processing, and bottling industries, uses include: bellows and diaphragms; high strength springs and wire brushes; switches, socket, and plug contacts; clutch discs; bourdon tubes; fuse clips, sleeve bushings, lock-washers, and fasteners; and printed circuits.

Features: Phosphor bronze is rolled by company in strip from 0.0005 to 6" wide, to tolerances as close as ± 0.0001 ". Strip is said to be available in any quantity.

Description: Metal possesses high tensile and yield strength, good ductility, resiliency, high fatigue strength, wear resistance and good bearing qualities.

Strip is processed on precision 2-High, 4-High, and Sendzimir rolling mills, the latter a 12-High cluster mill capable of rolling at 300 fpm. Final slitting to close tolerance widths is performed by gang slitters.

(Phosphor bronze strip is a product of Industrial Div., American Silver Co., Inc., Dept. CP, 36-07 Prince St., Flushing 54, N. Y. . . or check CP 7264 on handy form, pages 2 and 3.)

Plating production increased by bright copper process

Uses: In plating with copper.

Features: Bright copper process is said to increase plating production up to 60%, and be 98% efficient. It is also reported to save nickel and eliminate the operation of copper buffing.

Description: Process is said to have high speed of deposition and excellent throwing power. Brightness is achieved over a greater range, from 0 to 80 amp/sq ft, according to developer of process. Ductile deposits and low copper concentrations are featured in this process. Periodic reverse or intermittent current may also be applied.

(Copper plating process is a development of Smoothex, Inc., Dept. CP, Cleveland, Ohio . . . or for more information check CP 7265, pages 2 and 3.)

How to use fast response of strain gages

Methods and specifications of high frequency pressure cells (Type HF) are contained in 2-page illustrated sheet. Bulletin explains how gages may be used for rapidly changing pressures up to 20,000 psi.

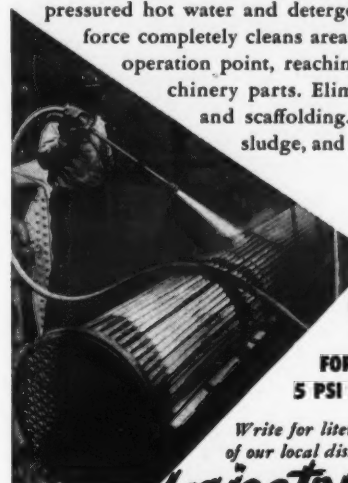
Bul 4107 is issued by Baldwin-Lima-Hamilton Corp., Dept. CP, 940 Simpson St., Eddystone 42, Pa. When inquiring specify CP 7265A on handy form, pages 2 and 3.

HYDRAULIC JET CLEANER

LEAST EXPENSIVE
TO BUY & OPERATE

MOST EFFECTIVE FOR
HEAVY DUTY CLEAN-UP

Operated by ordinary plant steam and cold water lines, this unit propels a solid jet of extremely high pressured hot water and detergent. The discharge force completely cleans areas up to 30 ft. from operation point, reaching inaccessible machinery parts. Eliminates down time and scaffolding. Removes all soil, sludge, and encrusted deposits.



**CUTS
CLEANING
COSTS
UP TO 94%**

**FOR ANY PLANT WITH
5 PSI STEAM & UPWARD**

Write for literature and the name
of our local distributor

SINCE 1848

SELLERS Injector CORPORATION
1400 Hamilton Street Philadelphia 30, Pa.

When inquiring check CP 7266 on handy form, pgs. 2-3

PUNCHES and DIES

IMMEDIATE DELIVERY
ON MOST STANDARDS

4 to 5 WEEKS DELIVERY
ON SPECIALS

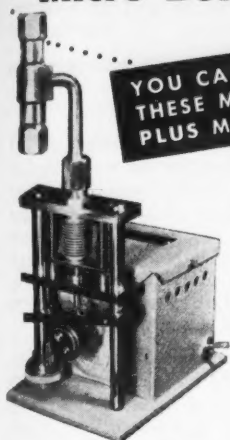
ARTHUR COLTON COMPANY

Div. Snyder Tool & Engineering Company
3465 E. LAFAYETTE • DETROIT 7, MICHIGAN

When inquiring check CP 7267 on handy form, pgs. 2-3

When inquiring check CP 7263 on handy form, pgs. 2-3

With the
CORSON-CERVENY
Micro-Bellows Pump



**YOU CAN HANDLE ALL
THESE MATERIALS—
PLUS MANY MORE:**

Acetaldehyde
Acetic Acid
Acetone
Aniline
Benzaldehyde
Benzene
Ethyl Benzene
Carbon Disulfide
Carbon Tetrachloride
Cyclohexane
Dioxane
Ethanol
Formalin
Isopropyl Alcohol
Methanol
Pyridine
Toluene
Water

We have a booklet that gives all construction, operation and application details of the Corson-Cerveny Micro-Bellows Pump. Write for your copy.

RESEARCH APPLIANCE COMPANY

Box 463, West View Road, Pittsburgh 9, Pa.

When inquiring check CP 7268 on handy form, pgs. 2-3

**NO Drip ...STOPS
CONDENSATION
DRIP!**



NO DRIP PREVENTS RUST

in addition to stopping drip and keeping floors dry.

ANYONE CAN APPLY

Brush, trowel or spray NoDrip on tanks, condensers, suction lines, vats, pipes, walls, ceilings, etc. NoDrip adheres to metal, concrete, brick, plaster. It forms a seamless covering that is effective as soon as dry. Acid, alkali and brine resistant.

Interesting 32-page Handbook shows what NoDrip is and what it does. It's free. Send coupon today.

☐ **SEND NO DRIP HANDBOOK**

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J.W. MORTELL CO., 530 BURCH ST., KANKAKEE, ILLINOIS
TECHNICAL COATINGS SINCE 1895

When inquiring check CP 7269 on handy form, pgs. 2-3

MAINTENANCE

**Safe, adequate heat
given by unit for
pump houses**

Uses: For heating pump houses, valve pits, washrooms, and warehouses.

Features: Electric unit is said to eliminate risk of fire so often caused by use of unsafe means of heating.

Description: Heater has completely sealed-in, cast aluminum heating element. There are no exposed glowing wires, assuring safety from fire, electric shock, and burns. Unit is UL approved. Built-in thermostat may be set for temperature desired and operation is automatic.



No exposed wires

Wall brackets are provided for mounting heater. Installation is simple. It is only necessary to run two wires (120 v and 240 v, as required) to heater connection box.

(Electric heater is a product of Electromode Corp., Dept. CP, 45 Crouch St., Rochester 3, N. Y. . . . or for more information check CP 7270 on the convenient Reader Service slip located between pages two and three.)

**Illustrates varied uses
for vertical pump motors**

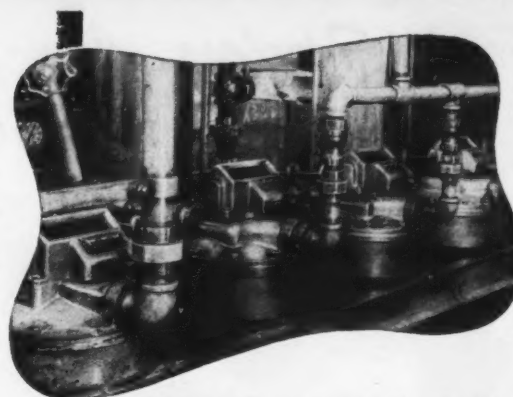
Various types of enclosures available for manufacturer's hollow and solid shaft vertical pump motors, and many varied uses for these motors in industry are described and illustrated in bulletin. Four-color cutaway and phantom drawings show details of oil- and grease-lubricated thrust-bearings available, and specific features of motor construction.

Bul 1250 is issued by The Louis Allis Co., Dept. CP, Lou & Skid St., Milwaukee 7, Wis. When inquiring specify CP 7270A on the convenient Reader Service slip, pages two and three.

**you
can't beat
the
accuracy
and
dependability
of**



**XACTO
METERS**



XACTO is the meter that's changing liquid-handling habits in every industry where liquid measure and control have been a problem.

XACTO safely handles over 600 different liquids in processing, blending, packaging and many other batching or continuous operations.

Write TODAY for the facts on XACTO!

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Canadian Plant and Sales, Hamilton, Ontario, Canada

When inquiring check CP 7271 on handy form, pgs. 2-3

*Turn
to page 214 . . .*

. . . for alphabetical index of all processes, materials, services, and equipment discussed in this issue's editorial columns and advertisements, turn to page 214. "Quick-locator" starting on that page was a feature in **CHEMICAL PROCESSING** years ago.

It means extra work for the Editors,
but it helps you, the reader, in find-
ing what you want . . . in a hurry!

Here's Tireless, Low-Cost Power

FOR 1001 JOBS IN YOUR PLANT



Hanna® *Air* Cylinders

**...LIKE PUTTING MORE "HOP"
IN YOUR HOPPER GATES**

Hanna Cylinders are serving men and machines in all types of industries throughout the country — providing *smooth, safe, dependable* power in 1001 ways. They simplify the actuation and control of machines and equipment involving a push, pull or lift movement.

For example, what could be more simple, direct and dependable for opening and closing hopper gates? Whether operated manually with Hanna Unitite Valves or by remote control with Hanna momentary Solenoid Valves, Hanna Air Cylinders are the economical, efficient answer to problems of this type.

In the machines you build, or in the equipment in your plant, there are many applications where Air Cylinder Power can be used to advantage. Hanna Engineers will be glad to work with you in applying Cylinder Power to your problems.

Send for Catalog

New Hanna Low Pressure Cylinder
Catalog No. 236 contains valuable
information. Send for your copy.



Hanna Engineering Works

HYDRAULIC AND PNEUMATIC EQUIPMENT . . . CYLINDERS . . . VALVES . . . RIVETERS

1744 Elston Avenue, Chicago 22, Illinois

When inquiring check CP 7272 on handy form, pgs. 2-3

ENGINEERING & MAINTENANCE

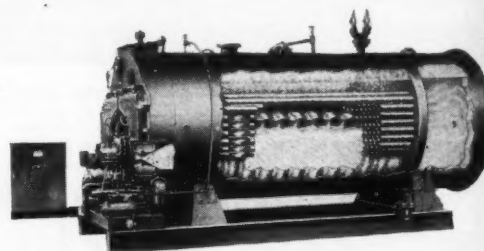
**Flexibility of application
marks integrated boiler-
burner units . . .**

firing is by light oil or gas, or a combination

Uses: To provide hot water and steam.

Features: Units are designed for flexibility of application, and include both steam and water models ranging in sizes from 39 to 456 hp for high pressure steam, and from 1,313,000 to 15,300,000 Btu for 15 lb steam or 30 lb water. All models are available equipped for firing No. 6 or lighter oil or for high or low pressure gas, or for a combination of the two. With combination models shifting from one fuel to another is quickly and easily accomplished.

Description: While engineered as one complete boiler-burner unit, boilers and burners are separately manufactured. Boilers, shipped direct to job from Kewanee, Ill., are Scotch, pre-tested, equipped with all necessary accessories, and mounted on steel skids. Burners, shipped from Cleveland, include forced draft air supply and all combustion controls, mounted and pre-wired in one central control cabinet. Burner controls and accessories are completely assembled and factory tested before shipment.



Boilers conform to ASME code and burners are UL approved

Matching connections make it possible to attach burner to boiler quickly and easily. Refractories are integrally mounted at the factory, cutting time and labor required in the field to an absolute minimum. Forced draft burner operation eliminates need for a high stack; a small vent extending above roof is the only requirement. Boilers conform to ASME boiler construction code, and are rated in accordance with the established code of Steel Boiler Institute. Burners are UL approved.

(Burners are a product of Petro, Dept. CP, Cleveland 11, Ohio. Boiler units are a product of Kewanee-Ross Corporation, Dept. CP, 101 Franklin St., Kewanee, Illinois . . . or for more information check CP 7272A on handy form, pages 2 and 3.)

Using Diethylene & Triethylene Glycols?

See "capsule" nomograph on page 194

**Reduced size, better protection
offered by line of polyphase
AC motors . . .**

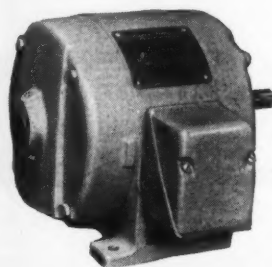
noise level of 10 hp unit now tests as low as former 2 hp model

Uses: For AC motor applications.

Features: With an average size reduction of 50% by volume and averaging 22% less weight per hp, units retain rigid cast-iron construction and incorporate improved insulation system, bearing assembly, and ventilation plan.

Sound is also considered. Noise level of the improved 10 hp unit tests as low as the former 2 hp model.

Description: Redesign of polyphase AC motors (called Tri-Clad 55) includes improved insulation system using strong polyester film combined with Formex wire, Glyptal varnish, and silicone Dri-film dip. Bearing assembly is more tightly sealed and contains a long-lasting grease. Improved ventilation system blankets frame with air. Exposed parts of motor are corrosion-resistant.



Averages 22% less weight
per hp

Motors are available in 182 and 184 frame sizes (1, 1½, and 2 hp at 1800 rpm) in horizontal drip-proof and totally-enclosed fan-cooled models, and a complete line of gear motors. Larger frame sizes will become available at regular intervals, according to manufacturer.

(Motors are products of General Electric Co., Dept. CP, One River Rd., Schenectady 5, N. Y. . . . or for more information check CP 7273 on handy form, pages 2 and 3.)

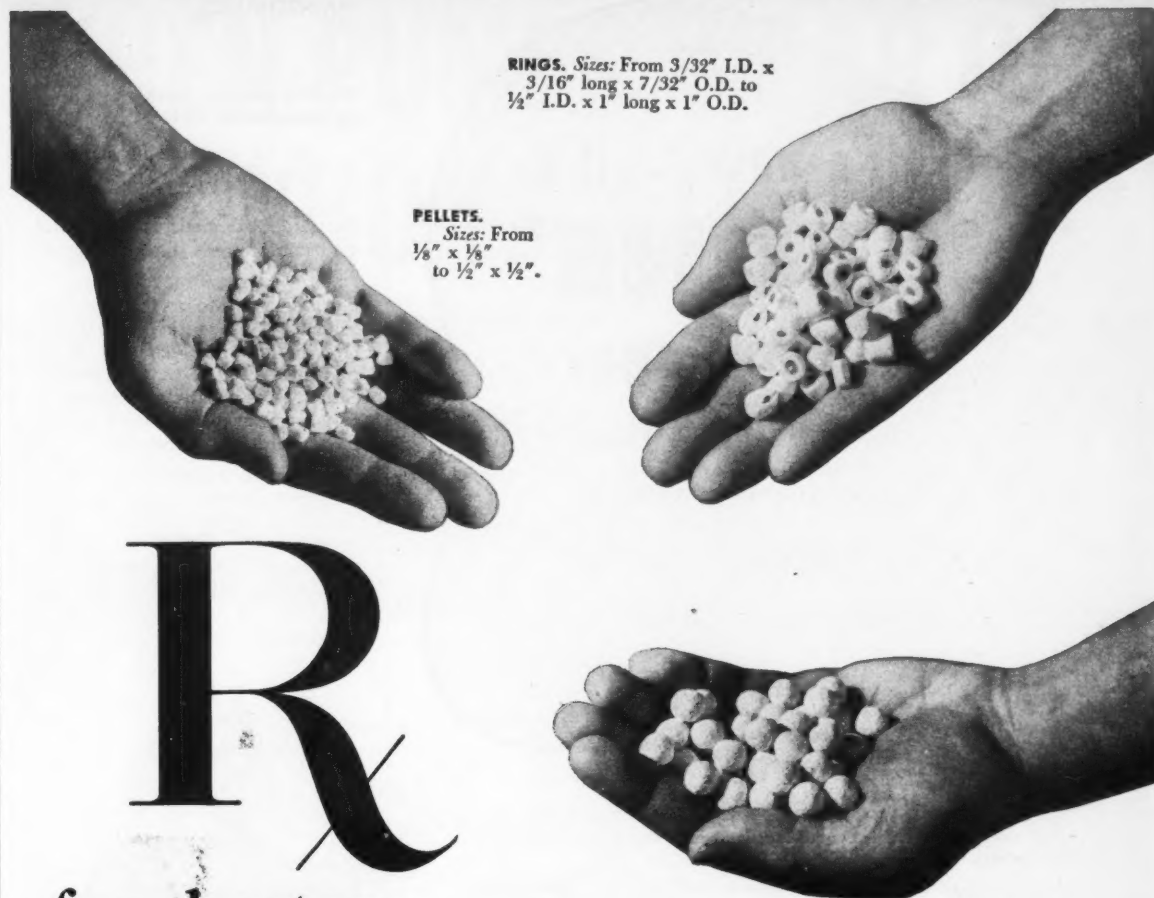
**Average of 40% more hp capacity
given by heat-resistant,
oil-proof V-belt**

Uses: For power transmission.

Features: Belt is said to provide 40% greater hp capacity on existing drives, and is longer lasting. On new drives, narrower sheaves may be used, saving space, because fewer belts are required for the same power demands.

Description: Super-Power V-belt has practically no stretch. Design has advantages of manufacture's Condor V-belt, but incorporates a stronger synthetic fiber strength member for greater power. Construction is of all synthetic rubber, and is oil-proof, non-spark, and heat-resistant.

(V-belt is a product of Raybestos-Manhattan, Inc., Dept. CP, 92 Townsend St., Passaic, N. J. . . . or check CP 7274 on handy form, pages 2 and 3.)



RINGS. Sizes: From 3/32" I.D. x 3/16" long x 7/32" O.D. to ½" I.D. x 1" long x 1" O.D.

PELLETS.
Sizes: From ⅛" x ⅛" to ½" x ½".

SPHERES.
Diameters: ¼" to 1".

R

for shorter
contact time!

*Norton specially engineered carriers bring proved
advantages to a wide range of processes*

Whatever your specific application may be, it will pay you to investigate the many advantages of Norton catalyst carriers.

Made of ALUNDUM* (fused alpha alumina), these highly refractory carriers are outstanding for heat conductivity, chemical inertness, mechanical strength and abrasion-resistance. And Norton's exclusive *controlled structure* process offers you a choice of porosities. In pellets and rings, porosities range from medium to high. In spheres, porosities range from medium, with rough exterior for coating with catalyst... to high, with a network of open pores and rough exterior for impregnating with catalyst.

Chemical engineers are finding this Norton "Special Refractory Prescription" invaluable in processing many different products. For example, in meeting the rapidly growing demand for phthalic anhydride, Norton catalyst carriers aid

in shortening catalyst contact time and in achieving the highly exothermic reaction in fixed bed converters.

Test Them Out

Find out just what Norton ALUNDUM

catalyst carriers can do for you. See your Norton Representative for samples, or write to NORTON COMPANY, 562 New Bond Street, Worcester 6, Mass.

Canadian Representative: A. P. Green Fire Brick Co., Ltd., Toronto, Ontario.

*Trade-Mark Reg. U. S. Pat. Off. and Foreign Countries



NORTON
REFRATORIES
ENGINEERED **R** PRESCRIBED

Making better products... to make other products better

NORTON COMPANY, WORCESTER 6, MASSACHUSETTS

When inquiring check CP 7275 on handy form, pgs. 2-3

It's new... it's "NETONE" Filter Paper

- HIGH TENSILE STRENGTH
- HIGH BURST FACTOR
- ABRASION RESISTANT
- CREASE RESISTANT
- CHEMICAL RESISTANT

"NETONE" Filter Paper is a neoprene impregnated kraft paper that offers decided mechanical and chemical advantages over standard filter papers.

When compared to 60-pound unbleached kraft "NETONE" Filter Paper shows a 500% increase in wet tensile strength, wet burst factor increases from 6 to 57 and there is a marked increase in abrasion and crease resistance.

Write us about your requirements and we will be glad to send samples for your testing.

... And for your filter cloth requirements, we weave fabrics of VINCEL*, SARAN, DYNEL, NYLON, ORLON**, VINYON N¹, and GLASS. Samples sent on request.

Solution	60-Pound Kraft	Wet Strength Resin	Neoprene Treated (3%)
H ₂ O	0	72 hr.	86 hr.
10% HCL	0	6 min.	4 hr.
10% NaOH	0	6 hr.	72 hr.

*TM —Nat'l Filter Media Corp.
**TM —E. I. duPont de Nemours Co.
†TM —Union Carbide & Carbon Corp.

NFM Weavers of Industrial Filter Media for over Forty Years
The National Filter Media Corp.
General Offices & Mills: New Haven 14, Conn.
Western Office & Factory: Salt Lake City 1, Utah

Sales Offices—Representatives
Chicago, Ill. Cincinnati, Ohio Houston, Texas Oslo, Norway Johannesburg, South Africa
2627 West 19th St. Roselawn Center Bldg. 1404 Second National Bank Bldg. Nicolai Friis Edward L. Bateman

When inquiring check CP 7276 on handy form, pgs. 2-3

MAINTENANCE

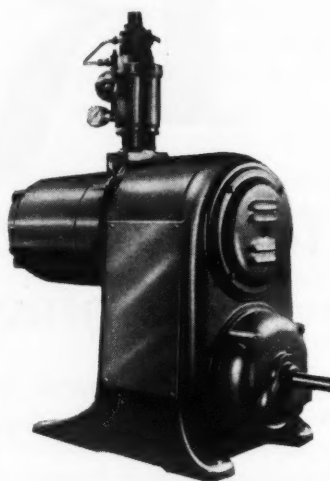
Electric motors controlled by pneumatic unit...

can be operated by standard instruments, or manually

Uses: Automatic speed control of manufacturer's line of electric motors.

Features: Motors can be controlled by such variables as liquid level or flow rate, temperature, or pressure. Control can be operated either automatically or manually. Signal system may be any one now in standard use by industry.

Approximate straight line relationship exists between signal air pressure and motor speed. This permits application of unit in proportioning controls. Straight line relationship also gives uniform sensitivity of control over entire speed range.



Pneumatic speed controller mounted on motor housing

Description: Called Varitrol, controller has been designed into manufacturer's line of electric motors from 1 to 30 hp. Unit is operated on air pressures of 60 to 100 psi. Positioner operates on 3 to 15 psi signal air, and controls pilot valve regulating power air to cylinder. System is explosion-proof.

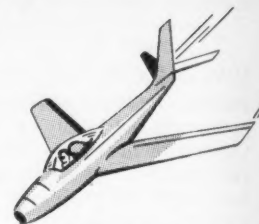
(Motor control is a development of U. S. Electrical Motors, Inc., Dept. CP, PO Box 2058 Terminal Annex, Los Angeles 54, Calif. ... or for more information check CP 7277 on handy form, pages two and three.)

As Modern and Efficient as the "Jets" They Help to Build!

Equipment for processing titanium used in the construction of the newest jet planes is heated by Trent patented

"FOLDED-and-FORMED" Heating Elements

This is another example of the many up-to-the minute applications for these modern electric heating units... the last word in efficiency and reliability.



"Folded-and-Formed" Heating Elements are available as follows:

Standard 12" x 12" Racks which can be installed vertically or horizontally in various combinations, to provide the required K. W., at temperatures up to 1350° F.

Custombuilt Racks to fit any flat or curved area, to provide maximum K. W., with operating temperatures up to 1850° F.



Tell us your heating problem. It is more than probable that "F-and-F" Elements will give you the efficient heat source you've been seeking.

TRENT INC.
Electrically Heated Industrial Equipment
235 LEVERINGTON AVE. PHILA 27, PA.

When inquiring check CP 7278 on handy form, pgs. 2-3

For FILTERING & FILLING
small plant or batch lots of
PHARMACEUTICALS, COSMETICS, CHEMICALS, SOAPS, Etc.

EFB-B FILTER
PORTABLE FILLER

Two Ertel units that make small production efficient. They have all the desirable features of Ertel high production equipment: EFB-B FILTER has single hand wheel for simple trouble-free operation, bronze or stainless circulatory system, accommodates accepted Ertel Asbestos Filter Sheets. PORTABLE FILLER has automatic overflow system, non-drip spouts, bottle size flexibility up to gallons. And, both units can be easily moved from place to place. Write for detailed information on this important equipment... it belongs in your plant.

ERTEL ENGINEERING CORPORATION

KINGSTON 3, NEW YORK
Branch Office & Showroom Located in New York City

COMPLETE LINE OF
Liquid Handling Equipment



When inquiring check CP 7279 on handy form, pgs. 2-3

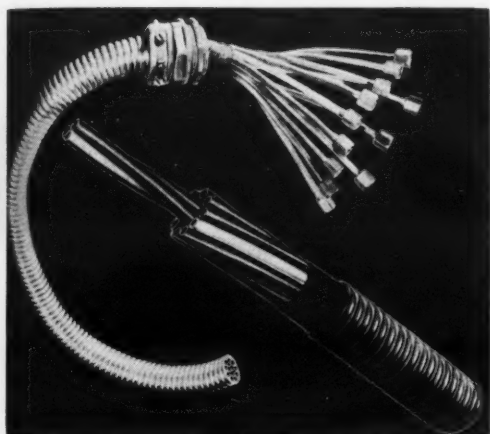
CHEMICAL PROCESSING

Armor protects tubing from injury, allows easy identification

Uses: On moderate to long runs of numbers of 1/2" and smaller tubes for use with instruments and process control equipment.

Features: One tube in each layer is a bright blue color, which permits identification of each tube at both ends. When connections are made there is no necessity for tracing through each tube. Position of each tube in each layer, with respect to the color-coated tube in that layer, remains the same throughout the length of the armored Multitube.

Description: Armored Multitube is group of long length tubes twisted together to permit bending without distortion of tubes, which are thoroughly protected from injury during and after installation by flexible interlocked galvanized steel armor.



When making connections, tracing through each tube is unnecessary

Two to 19 tubes in 1/4" OD copper and aluminum are normally available from factory stock. Long, continuous lengths up to 1000 ft save waste and short ends. Tubes are available in copper, aluminum, polyethylene, and other plastics.

(Armored tube is a product of Crescent Insulated Wire and Cable Co., Dept. CP, Taylor and Lawrence St., Trenton, N. J. . . . or for more information check CP 7280 on handy form, pages 2 and 3.)

Line of threaded jacketed pipe and fittings announced

Addition of threaded jacketed pipe and fittings to manufacturer's line of jacketed equipment has recently been announced. Fittings are available in sizes from 1/2 to 4". Line consists of 90° elbows, 45° elbows and tees. Material used is carbon steel, and pressure ratings are to 625 psi @ 900° F.

(Jacketed pipe and fittings are products of Red Jacket Co., Inc., Dept. CP, 510 Investment Bldg., Pittsburgh 22, Pa. . . . or check CP 7281, pages two and three.)

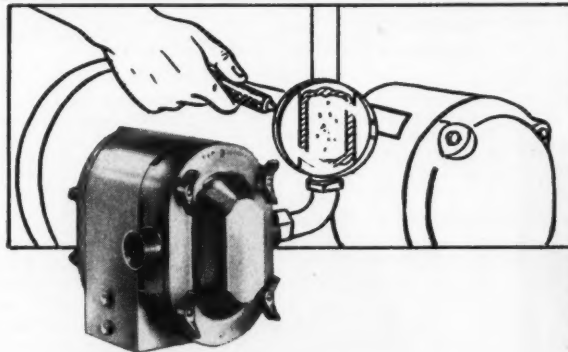
WHEN PUMPS WEAR OUT ... WHO IS AT FAULT?



Waukesha P. D. Sanitary Pumps

... Investment in Product Protection

Protection against aeration, agitation of your product depends on retaining the close tolerances built into every Waukesha P.D. Pump. It's a precision instrument that deserves the best of in-plant care, and will reward you with months and years of longer service, more efficient performance at lower maintenance cost. Write for latest instruction handbook — and catalog showing all models.



Your cleaning solutions become "grinding" solutions if you recirculate them through close-tolerance pumps like the Waukesha! Cleaning solutions in themselves, if they contain no strong organic mineral base acids cannot damage Waukesha Stainless Steel Pumps, (unless left in contact with pump parts long enough to etch the metal). But after running these solutions through your lines you pick up minute abrasive substances, grit, milkstone and dirt that can be both costly and dangerous if forced back through the close tolerances of the pump. These "in-the-line" abrasives score metal surfaces, eventually wearing down the impellers and interior surfaces. The result is loss of displacement, lowered delivered capacity — and earlier repair or replacement.

So, if your cleaning procedure calls for pumping cleaning solution through production lines by means of a Waukesha P.D. Pump, be sure to discharge the solution at the end of the line. DON'T RECIRCULATE IT! What you save on caustics you'll lose many times over in pump repair or loss of efficiency, because just a little dirt turns cleaning into a "grinding" operation that shortens pump life.

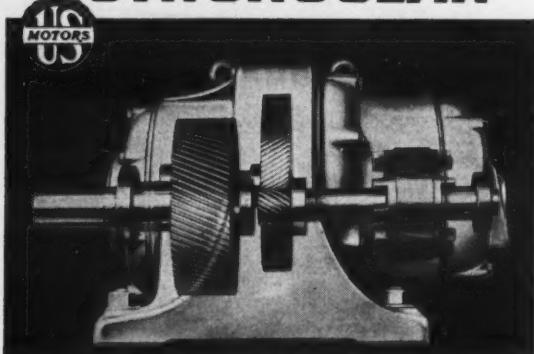
*P.D. — Positive Displacement — Slow Speed

WAUKESHA FOUNDRY COMPANY, 1344 LINCOLN AVENUE
WAUKESHA, WISCONSIN

Waukesha 100%
SANITARY
PUMPS
Dependable Product of a Responsible Manufacturer

When inquiring check CP 7282 on handy form, pgs. 2-3

Geared Power SIMPLIFIED WITH **SYNCROGEAR**



The motor that internally gears its speed

DON'T go to the expense of installing a gear box with extra coupling and guards to rig up slow speed for a motor. Install the U.S. Syncrogear motor and avoid extra contraptions. You'll simplify your power hook-up, save space, eliminate hazards and give your driven machine the most efficient power. The U.S. Syncrogear motor was one of the first complete integral power units, introduced 22 years ago. It's backed by experience, tested and proved performance and engineering "know-how" that only U.S. MOTORS can offer to those seeking the most dependable geared motor power.

SYNCROGEAR ADVANTAGES

Compact—rugged—quiet	Pyramidal supporting base
No external gear box	Solid shank pinion
No extra coupling	Normalized castings
Internally-gear	Extra large oil reservoir
Single unit on one base	Asbestos-protected windings
Completely housed	In-a-line shaft
Reduced frictional losses	Neat, streamline appearance
Permanently-aligned parts	Drip-proof surface
Super-hardened gears	

U.S. SYNCROGEAR MOTOR

4 TO 10,000 RPM.
1/4 TO 30 H.P.

REQUEST FOR SYNCROGEAR MOTOR BOOKLET

U. S. ELECTRICAL MOTORS INC. CP-3
Box 2058, Los Angeles 54, Calif.
or Milford, Conn.

NAME _____
COMPANY _____
ADDRESS _____
CITY _____ ZONE _____ STATE _____



When inquiring check CP 7283 on handy form, pgs. 2-3

ENGINEERING & MAINTENANCE

Variety of operations performed by electric drill with 19 accessories

Manufacturer has announced availability of an electric drill kit, complete with 1/4" drill and 19 accessories for drilling, buffing, polishing, grinding, and wire brushing.

Drill is small, lightweight and streamlined, yet is said to be ruggedly built for long operation. It features pistol grip operation and has a trigger lock pin for continuous running.

Copper Line Kit No. 4CLJK, including drill and accessories, is packaged in a convenient steel carrying case.

(Drill kit is a product of Thor Power Tool Co., Dept. CP, Aurora, Ill. . . . or for more information check CP 7284 on handy form, pages 2 and 3.)

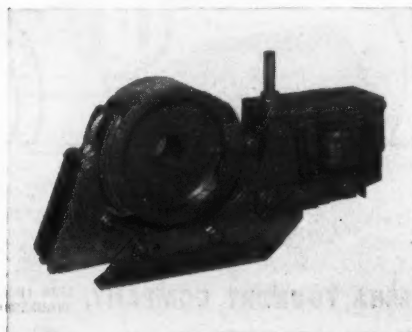
Three adjustments in one combined in redesigned AC brake

Uses: Applicable to practically all AC motor installations that demand start-stop operation or quick deceleration—such as cranes or machine tools.

Features: Result of a complete redesign, AC brake combines what were three adjustments into one: 1) spring compression—to torque control; 2) magnet travel—to control total shoe clearance from wheel; and 3) auxiliary screw adjustment—to equalize shoe clearances. Also, a visible indicator has been provided to tell maintenance crew when and how much to readjust for brake wear.

Description: Although designed for normal mounting on a horizontal plane, unit is said to operate satisfactorily regardless of angle of mounting plane.

Operation of brake is comparatively simple and derives its effectiveness from its linkage system. Because of the geometry of system, force presses shoes against wheel with equal pressures. Any misalignment of wheel center to right or left of vertical center line of brake causes linkage to pivot, but will not change effect of force on shoes. Turning due to vibration is prevented by two spring clips.



Will operate satisfactorily regardless of angle

SMOOTH—VIBRATIONLESS PROPELLERS

for MIXING, STIRRING,
AERATING, PUMPING, etc.

Manufactured by an exclusive process, MICHIGAN propellers are perfectly balanced to avoid whip and strain on shafts. And because of their superior functioning are now standard parts of the products of many leading equipment manufacturers.

Available for special application and replacement, as well as original equipment, in a wide variety of metals and in sizes up to 60". Write for latest data folder.

MODEL
GDA - MIXER
BY
INTERNATIONAL
ENGINEERING
DAYTON, OHIO



MICHIGAN WHEEL CO.

GRAND RAPIDS 3, MICH.

When inquiring check CP 7285 on handy form, pgs. 2-3

**CUT PAINTING
TIME and COSTS!**

with the **ARSCO** ORIGINAL

**INDUSTRIAL
PAINT ROLLER**

FOR HEAVY DUTY
Used by Industry and Gov'ts. World-Wide.

FOR FACTS
MAIL NOW

THE AMERICAN PROD. CO., 3308 Edison Ave., New York 69
Please send illustrated literature and price list.

Name _____
Company _____
Street _____
City _____ Zone _____ State _____

Please send complete sample Paint Roller Kit—9 inch size. Includes tray —\$5 payment enclosed ☐

When inquiring check CP 7286 on handy form, pgs. 2-3

Maximum
clapper-type
versal of
vented by
(AC bral
Electric C
Pa. . . .
check CP
between

Rectifier
for vari

uses

Uses:
able volt
equipment

Features:
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Descrip
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control
mercury
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Tubes a
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(Rectifie
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Cleveland
reader m
pages 2

Maximum impact area is provided by short-stroke clapper-type magnet. Backlash due to wear and reversal of thrust in various joints of linkage is prevented by tension springs.

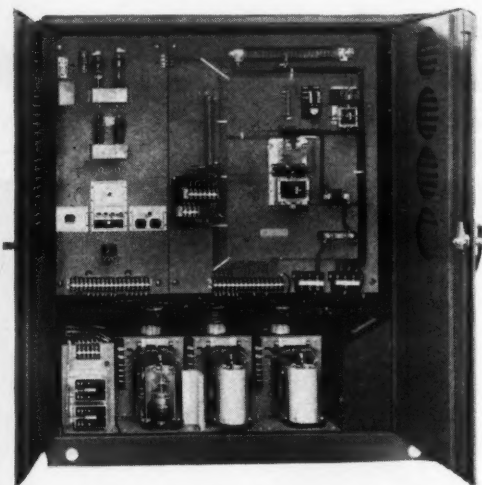
(AC brake, Type AK, is a product of Westinghouse Electric Corp., Dept. CP, Box 2099, Pittsburgh 30, Pa. . . or for more information reader may simply check CP 7287 on handy Reader Service slip located between pages 2 and 3.)

Rectifies 3-phase alternating current for variable speed drives . . .

uses single anode mercury pool rectifier tubes

Uses: For converting AC to controlled DC variable voltage for application to adjustable speed drive equipment.

Features: Light weight units provide rectification for 30 to 50 hp drives. Wide speed range is available. Output voltage can be accurately held at low values. Problem of residual voltage is not en-



Mercury arc rectifier is self-contained unit

countered. Multi-phase bridge circuit allows use of drive motors of same physical size as those used with rotating conversion.

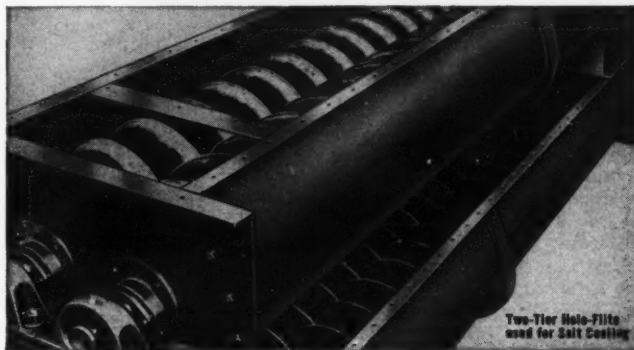
Description: Xatron V-S Drive consists of operator's control station, adjustable speed motor, and control unit. Control unit uses six single anode mercury pool rectifier tubes. Three-phase AC supplies a full wave bridge to give a six peak DC output. Tubes are grid controlled by an electronic phase-shifting circuit. Enclosed in a cabinet (57" wide, 66" high, and 28" deep), units have blower supplying filtered cooling air.

(Rectifier is a development of Reliance Electric & Engineering Co., Dept. CP, 1088 Ivanhoe Road, Cleveland 10, Ohio . . . or for more information reader may simply check CP 7288 on handy form, pages 2 and 3.)

A revolutionary new principle in Coolers . . .

THE holo-flite^{*} PROCESSOR (HOLLOW-FLITE)

Backed by the same well-known organization that pioneered COTTRELL Precipitators, MULTICLONE Collectors and other leading products, the HOLO-FLITE Processor represents a far-reaching advancement in the science of heat-exchanger design. Widely adaptable to various types of cooling and similar applications in industrial processing operations, the HOLO-FLITE handles powdered or granular solids, moist pastes or slurries with equal facility. Moreover, it requires as little as 1/5th the space of other heat exchangers . . . causes no dust, therefore requires no costly or complicated auxiliary recovery equipment . . . and maintains its uniformly high efficiency under modern continuous-flow operations (no stop-and-go "batching" operations are necessary).



Unique Simplicity

Basically, the HOLO-FLITE consists of two or more hollow intermeshing conveyor screws that slowly rotate in a trough or tube. The cooling agent circulates through the hollow flights and shafts of the conveyor screws while the product itself "flows" in the trough where it is constantly rotated into, around, over and under the moving heat-exchange surfaces. The continuous mixing, turning, folding action causes a constant change of contact with the heat-exchange surfaces and results in a high rate of heat transfer. Yet the action is so gentle that there is no dusting and little, if any, abrasion of crystalline particles.

Unlimited Capacity

HOLO-FLITE Processors can be readily adapted to virtually any capacity requirement and are in daily operation on such varied products as sand, cement, cottonseed cake, soybean meal, borax, salt, sugar, baby foods, and many other products. Cooled products can be packaged directly from the HOLO-FLITE discharge, saving time, space and additional handling.

Be sure to investigate HOLO-FLITE savings before you install heat-exchange equipment. To insure maximum operating efficiency at low overall cost, each installation is individually engineered to the job using basic stock-size elements. Contact the nearest Western Precipitation office for further details on the revolutionary HOLO-FLITE Processor—or write direct!



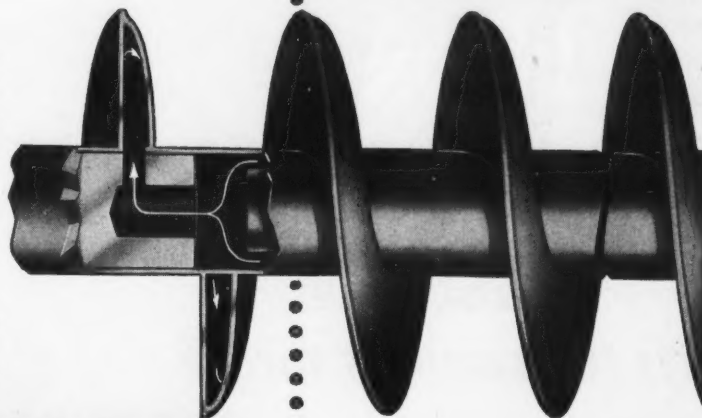
FREE! New 8 Page Bulletin describing HOLO-FLITE features and applications will gladly be sent on request!

*Reg. T.M.

► Handles Pastes, Sludges or Solids!

► Up to 80% Saving in Space!

► Permits Continuous, High Efficiency Operation!



A FEW OF MANY HOLO-FLITE ADVANTAGES

WIDE ADAPTABILITY: HOLO-FLITE handles fine-grained, crystalline or powdered solids, pulps, pastes and slurries with equal ease. Heat transfer agent can be refrigerant, cooled or ambient water, or other fluids to provide a wide range of processing temperatures.

SPACE-SAVING COMPACTNESS: Because of its large active heat-transfer surface per cubic foot of space required, the HOLO-FLITE requires only a minimum of space—is 5 to 6 times as compact as other equipment of comparable capacity!

LOW POWER REQUIREMENTS: HOLO-FLITE conveyor screws rotate slowly—usually only 1 to 12 r.p.m. Further, multiple tiers can be driven by one motor, assuring low power consumption.

INSTALLATION FLEXIBILITY: The basic HOLO-FLITE unit is two intermeshing screws in a single trough, but four or six screws per trough can also be installed. Moreover, any number of troughs can be "tiered" on top of one another—trough lengths can be varied from 8 to 20 ft.—screw diameters can be varied from 7" to 16"—to provide virtually any desired capacity in a minimum of space!

Write for full details on the many savings the HOLO-FLITE Processor can bring to your particular applications.

WESTERN

Precipitation

CORPORATION

DESIGNERS AND MANUFACTURERS OF EQUIPMENT FOR
COLLECTION OF SUSPENDED MATERIALS FROM GASES & LIQUIDS

Main Offices: 1023 WEST NINTH STREET, LOS ANGELES 15, CALIFORNIA
CHRYSLER BLDG., NEW YORK 17 • 1 N. La SALLE ST. BLDG., CHICAGO 2
1429 PEACHTREE ST. N.E., ATLANTA 5 • HOBART BLDG., SAN FRANCISCO 4
PRECIPITATION CO. OF CANADA, LTD., DOMINION SQ. BLDG., MONTREAL

When inquiring check CP 7289 on handy form, pgs. 2-3

AIMING TO CLEAN TUBES
AS SMALL AS 1/4" ID?



WILSON PISTOL GRIP hits the smallest target

Cleaning small tubes is often a difficult production problem in refinery and chemical plants. But Wilson Engineers have developed a fast, efficient, low-cost solution in the Pistol Grip Tube Cleaner, which thoroughly removes deposits from tubes as small as 1/4" ID. This production tool is another Wilson first in tube cleaning equipment.

The Pistol Grip weighs only 3 lbs.—no more than a 12" Stillson wrench. It provides the operator with one-hand control for cleaning small, straight tubes of 1/4" to 1" ID in sterilizers, hot water heating units, lube oil heaters, oil pre-heaters, heat exchangers and other small bore tube apparatus.

Write for Bulletin 1046

Wilson S Series Air or Steam Motors were specially designed for cleaning small straight tubes from 3/8" OD to 1 3/4" OD. They have ample power and speed for fast, efficient removal of any deposit within their capacity and will work equally well in ferrous and non-ferrous tubes.

S Series Air or
Steam Motor
with Model "A"
Unit Cutter Head



Representatives in all principal cities
THOMAS C. WILSON, INC.
21-11 44th AVENUE, LONG ISLAND CITY 1, N. Y.
Cable address: "Tubeclean" New York

WILSON

TW 020
TUBE CLEANERS • TUBE EXPANDERS

When inquiring check CP 7290 on handy form, pgs. 2-3

ENGINEERING & MAINTENANCE

**High temp revolving joints
are bracketed, mounted
with solid piping . . .**

manufactured in sizes 1/2 to 5" inclusive, with stationary or rotating syphons

Uses: For steam, air, or hydraulic piping.

Features: Revolving joint can be bracketed and mounted with solid piping.

Description: Unit is manufactured with stationary or rotating syphons, left or right hand threads, and is capable of handling temperatures up to 550°F at 300 lb steam pressure. It is available in sizes 1/2 to 5" inclusive.



Joint handles temps to 550° F at 300 lb steam pressure

Joint is self-contained, requires no mounting bracket. It has low turning torque with a Teflon stationary seal. Rotation takes place against a flat face of spring-seated, heat-treated carbon which aligns itself to roller bearing.

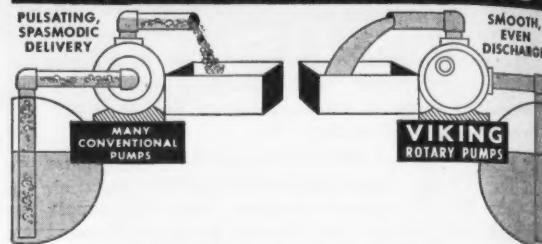
(Revolving joints are products of Rotherm Engineering Co., Inc., Dept. CP, 7280 W. Devon Ave., Chicago 31, Ill. . . . or for more information check 7291 on handy form, pages 2 and 3.)

Shows how attachments extend machine tool work range

Large fold-up type bulletin contains information on manufacturer's line of machine tool attachments and accessories. Ways of extending present machine job ranges are indicated. Diagrams and photos show attachments in use on lathes, drill presses, shapers and other units.

Cat 5321C is available from South Bend Lathe Works, Dept. CP, South Bend 22, Ind. When inquiring specify CP 7292 on handy form, pages 2 and 3.

IF YOU WANT SMOOTH PUMPING



Use VIKING rotary pumps and you won't have pulsating, spasmodic delivery with aerated and foamy discharge.

With VIKINGS, you have fast, smooth priming and constant, even discharge of the liquids from beginning to end.

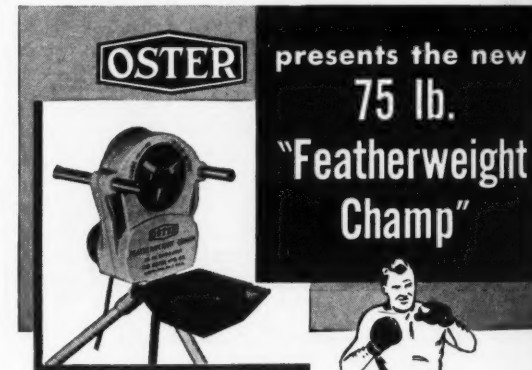
You can also handle not only thin, gaseous liquids, but heavy, viscous liquids as well. And all can be handled with excellent results.



Ask for further details today. Bulletin 54SCC sent promptly on request.

VIKING PUMP COMPANY
CEDAR FALLS, IOWA

When inquiring check CP 7293 on handy form, pgs. 2-3



The all new Oster "Featherweight Champ", a Power Drive for Hand Pipe Tools, has just weighed in at 75 lbs. One man can move it and use it with ease . . . yet the "Featherweight Champ" is exceptionally sturdy and powerful. Ideal for "on the spot" threading, its range is 1/4" to 2", and it is available with either electric or gasoline power.

For the full story on the "Featherweight Champ" see your local Oster Distributor.

THE OSTER MANUFACTURING CO.
Main Office and Factory:
2032 East 61st St. • Cleveland 3, Ohio

Builders of Cost Reducing Threading Equipment Since 1893

When inquiring check CP 7294 on handy form, pgs. 2-3

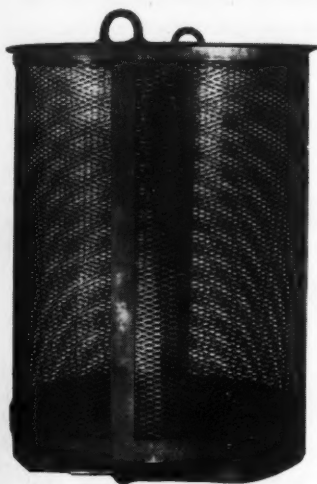
CHEMICAL PROCESSING

MAINTENANCE

Use of expanded metal in basket improves degreasing process

Degreasing basket utilizes expanded metal to provide maximum open area and penetration of liquid or air, combined with strength and durability. According to manufacturer, smooth diamond pattern of expanded metal prevents lodging of liquid and waste particles in corners, with consequent reduction in size of openings.

Baskets and trays of expanded metal are available in a variety of sizes and shapes to suit industrial needs. Made by slitting and



Pattern prevents lodging of liquid and waste particles in the corners of the basket

stretching solid steel sheet, of various gauges, into one-piece panels that can be easily formed and welded to steel framework, expanded metal has a high strength/weight ratio that is said to be an advantage in many industrial applications.

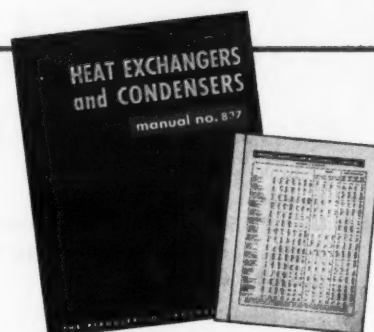
(Degreasing basket made by Stanwood Corp., Chicago, Ill., utilizes expanded metal product of Wheeling Corrugating Co., Dept. CP, Wheeling, W. Va. . . . or for more information check CP 7295 on handy form which is located between pages 2 and 3.)

For more information on product at right, specify CP 7296 . . . see information request blank between pages 2 - 3.

now



FLEXIBLE STANDARDS for Pfaudler Stainless Steel Heat Exchangers



Pfaudler Data Book to help you save time on heat exchanger calculations

This 40-page, fact-packed manual is designed to help you solve heat exchanger problems. Contains all the data you need to work out capacity and type—arranged in easy-to-follow tables, curves and charts. Full details on Pfaudler heat exchangers. It's a basic working handbook which no one concerned with heat exchange should be without. Just mail the handy coupon for your copy.

Design features previously associated only with custom-built heat exchangers are now available at competitive standard cost under Pfaudler's new system of flexible standards.

For a given heat transfer area, you may select the most applicable combination of length and diameter. Further, nozzles can be of any size and in any position and can be either threaded or flanged. This flexible standards program applies to fixed tube sheet, single or multi-pass, tube and/or shell side stainless steel units in diameters up to 10".

RAPID DELIVERY through Production Line Methods

Under present conditions, flexible standard units can be delivered in from 4 to 8 weeks after the receipt of your order, always considering first our obligations under our country's allocation and ratings programs. Fastest deliveries are obtainable in the smaller sizes (4½" to 6"). These rapid deliveries are possible because we carry a stock of tube sheets, bonnets, nozzles, tubes, baffles, etc., ready for assembly to your specifications.

Pfaudler

THE PFAUDLER CO., ROCHESTER 3, N.Y.

ENGINEERS AND FABRICATORS OF CORROSION RESISTANT PROCESS EQUIPMENT

GLASS-LINED STEEL—Hastelloy • Aluminum • Tantalum • Teflon
Carbon Steel • Solid or Clad Stainless Steel • Nickel • Inconel • Monel

THE PFAUDLER CO., Dept. CP3, Rochester 3, N.Y.

Please send me the Pfaudler Heat Exchanger Manual No. 837

Name _____

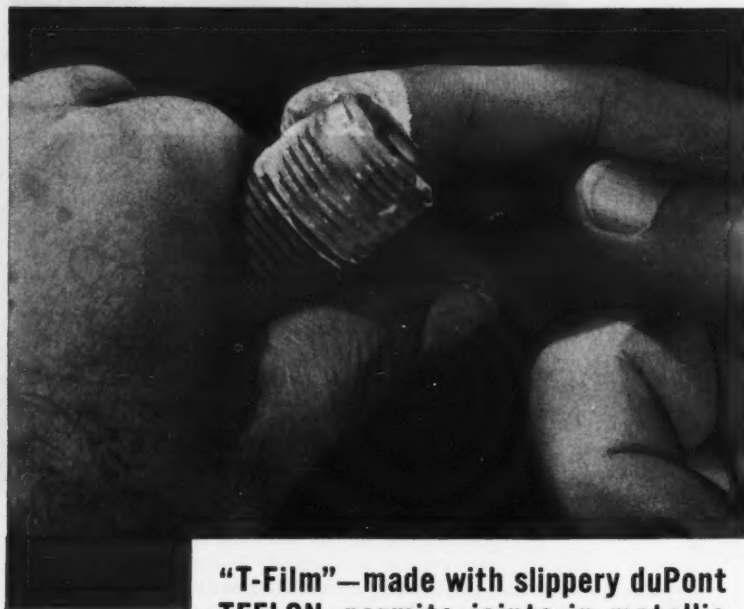
Title _____

Company _____

Address _____

City _____ Zone _____ State _____

TEFLON Base Thread-Sealing Compound seals tight against hazardous and corrosive fluids and gases



"T-Film"—made with slippery duPont TEFLON, permits joints in metallic and plastic piping to be broken easily without damage

Compound forms a continuous film preventing spiral wicking and leakage.

Suitable for all types of process pipe lines and equipment and for temperatures up to 400°F.

Eliminates galling and sheared threads when breaking joints.

One ounce seals between 15 to 20 joints in 1 inch P.T. pipe.

Made by the makers of the famous Eco All-Chem Stainless Steel and Teflon Pumps.

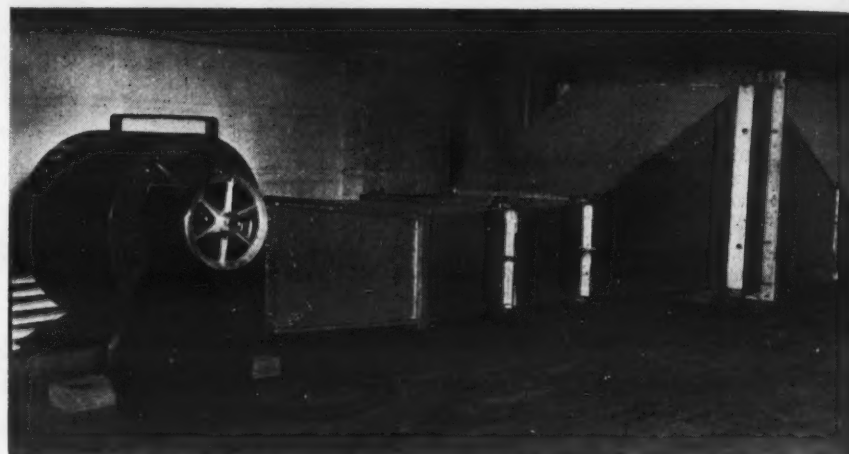


ECO

ECO ENGINEERING COMPANY
Chemical Products Division
12 New York Ave., Newark, N. J.

When inquiring check CP 7297 on handy form, pgs. 2-3

engineering and maintenance



Filter system, mounted in 3' vertical space on top of sealed room-within-a-room, provides comfortable working conditions below

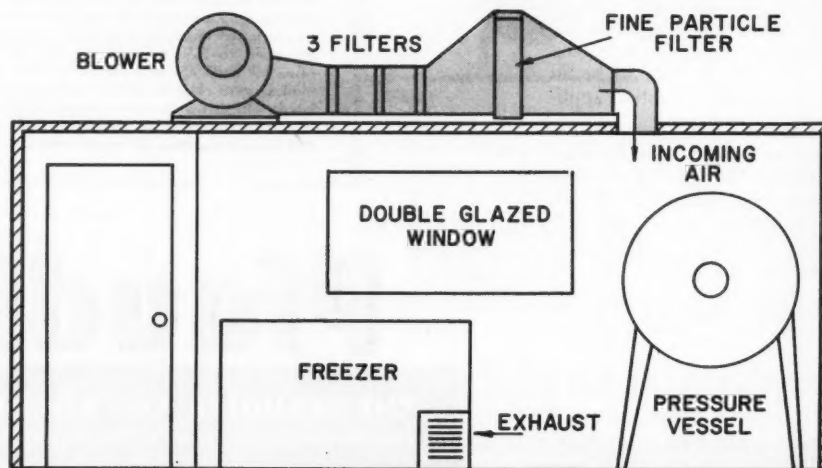
Dry filter and blower system — *provides fresh, sterile air at 50 to 100 cu ft/minute*

Unit 99.95% effective against 0.3 micron particles allows long work periods in sealed room

Problem: At Princeton Laboratories, Inc., Princeton, N. J., personnel had to endure heat and humidity in a closed and sealed sterile room for short periods of time during which no fresh air could

safely be admitted. Sealed room-within-a-room, approximately 9 x 16 x 7 ft including a small vestibule, is used for preparing clinical trial materials (glandular and enzyme products) for pharmaceutical firms. In the past, the 850 cu ft of air in the room has been sterilized by ultraviolet lamps alone.

Solution: Recently installed dry filter system now provides 50 to 100 cu ft/min



Air flow to sterile room, shown in section, is regulated by pull chain

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of fresh, sterile air. Outgoing air passes through compressor compartment of a freezer unit which has sealed air duct through wall of room. Air flow through this unit also removes heat generated by compressor.

System includes four filters, the first three of which are 10 x 20 x 1" fiber-glass elements which remove largest particles from air. The fourth, on which success of system depends for removal of finest particles, is an Ultra-Aire filter. It is said to be 99.95% effective against particles 0.3 micron in diameter. This unit has an initial pressure drop of only 0.2" of water at maximum (100 cfm) flow rate used in system. It consists of about 150 sq ft of dry filter paper fan-folded over corrugated spacers which give maximum surface exposure. Complete unit is 24 x 24 x 5-7/8" overall. It is expected to give a year's service before replacement.

Equipment in entire filter system consists of a sheet metal duct into which the four removable filters are clamped and sealed, and a standard blower driven by a 1/4 hp motor. It is mounted on top of the sterile room in line with an opening in the ceiling below.

Results: Air filter system has added greatly to the comfort of those in the room and permits working there for long periods of time. Effectiveness of system was demonstrated at Princeton Laboratories by preliminary tests in which culture plates were placed directly in air stream of ceiling duct for one hour. There was no bacterial contamination of cultures.

(Ultra-Aire filter is a product of Mine Safety Appliances Co., Dept. CP, Braddock, Thomas, and Meade St., Pittsburgh, Pa. . . . or for more information check CP 7298, pages 2 and 3.)

High bonding strength, flexibility offered by clear baking, organic insulating varnish

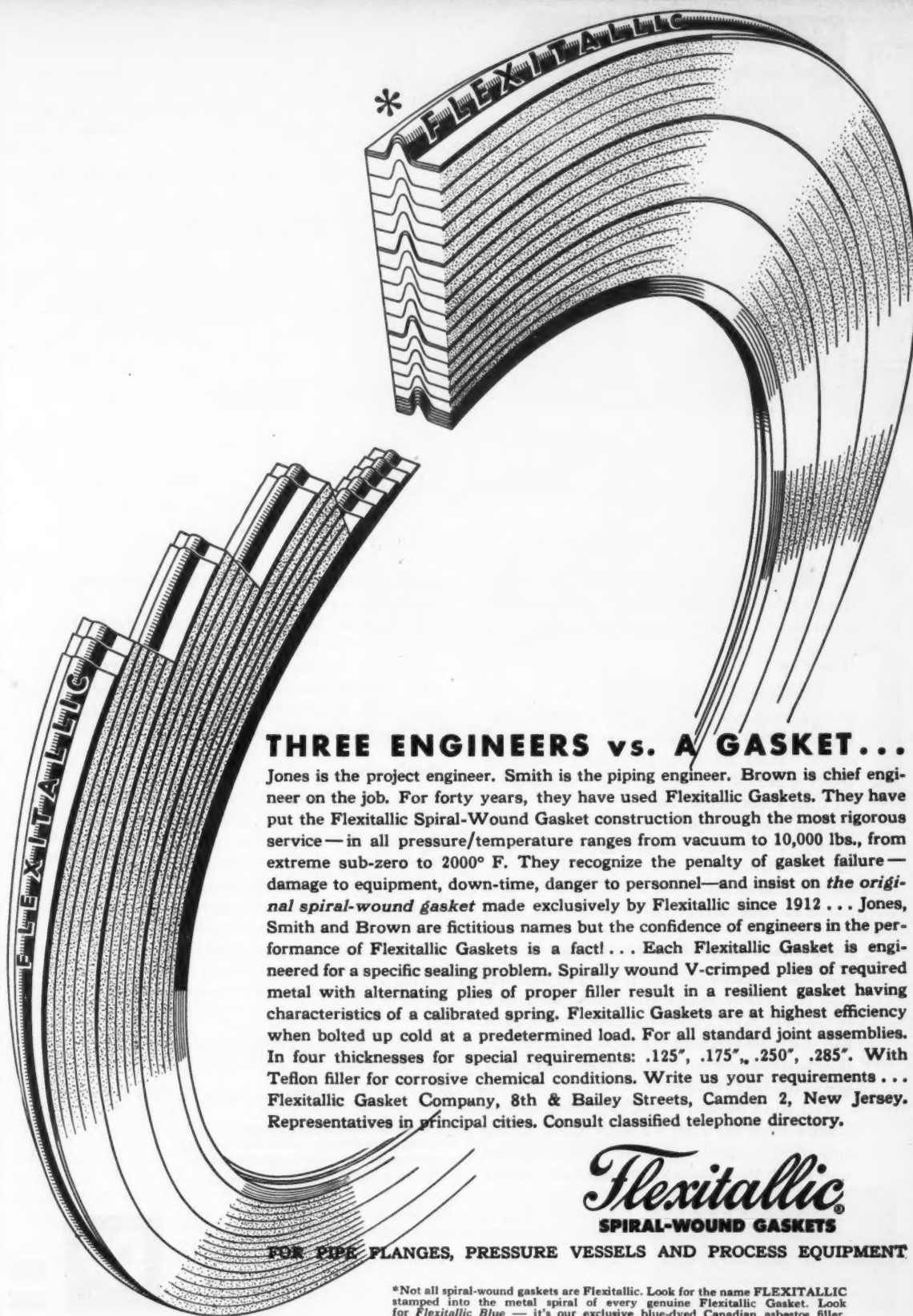
Uses: As an insulating varnish for heavy electrical equipment.

Features: Clear baking organic varnish is said to offer high bonding strength combined with flexibility and long life at Class B temperatures and above.

Description: It is reported that field tests have proved varnish, G-E 9615, suitable as insulation on coils operating continuously at 150°C and for short periods at 175°C. Insulation is said to retain all advantages of conventional oil-phenolic varnishes. It has a dielectric strength of 1200 v per mil wet and 2200 v per mil dry. It can be cured in one hour at 150°C and exhibits resistance to chemicals, oil, and salt water.

Material is supplied as a 50% solids solution in diacetone alcohol thinner. It may be thinned as received with as much as 50% of xylol by weight.

(Insulating varnish is a product of Chemical Materials Dept., General Electric Co., Dept. CP, Pittsfield, Mass. . . . check CP 7299, pages 2 and 3.)



THREE ENGINEERS vs. A GASKET...

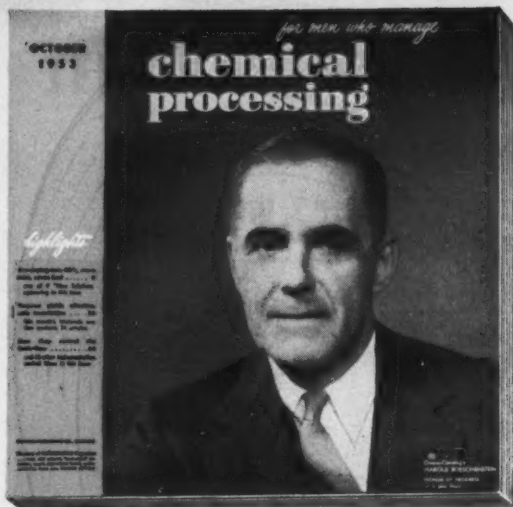
Jones is the project engineer. Smith is the piping engineer. Brown is chief engineer on the job. For forty years, they have used Flexitallic Gaskets. They have put the Flexitallic Spiral-Wound Gasket construction through the most rigorous service—in all pressure/temperature ranges from vacuum to 10,000 lbs., from extreme sub-zero to 2000° F. They recognize the penalty of gasket failure—damage to equipment, down-time, danger to personnel—and insist on *the original spiral-wound gasket* made exclusively by Flexitallic since 1912 . . . Jones, Smith and Brown are fictitious names but the confidence of engineers in the performance of Flexitallic Gaskets is a fact! . . . Each Flexitallic Gasket is engineered for a specific sealing problem. Spirally wound V-cripped plies of required metal with alternating plies of proper filler result in a resilient gasket having characteristics of a calibrated spring. Flexitallic Gaskets are at highest efficiency when bolted up cold at a predetermined load. For all standard joint assemblies. In four thicknesses for special requirements: .125", .175", .250", .285". With Teflon filler for corrosive chemical conditions. Write us your requirements . . . Flexitallic Gasket Company, 8th & Bailey Streets, Camden 2, New Jersey. Representatives in principal cities. Consult classified telephone directory.

Flexitallic
SPIRAL-WOUND GASKETS

FOR PIPE FLANGES, PRESSURE VESSELS AND PROCESS EQUIPMENT

*Not all spiral-wound gaskets are Flexitallic. Look for the name FLEXITALLIC stamped into the metal spiral of every genuine Flexitallic Gasket. Look for Flexitallic Blue — it's our exclusive blue-dyed Canadian asbestos filler.

When inquiring check CP 7300 on handy form, pgs. 2-3



Have you wondered
why this magazine
comes to you

...without charge?

MAYBE, LIKE MANY others, you've always thought that all publishers make their money, or much of it, from the subscriptions they sell.

'Tisn't so . . .

. . . no, 'tisn't so. With the exception of a few general magazines (e.g. *READER'S DIGEST*) that sell hundreds of thousands — some millions of copies — most industrial publishers with relatively small circulations actually lose money on their subscription sales.

Then how do industrial publishers make money? As you can guess, they make it from the advertising they sell. *Total subscription sales are hardly a "drop in the bucket" compared to advertising revenue.*

Advertisers demand best coverage

Since advertisers pay the bills, they demand best possible coverage of all important men in the field. So it's up to the publisher to publish the most readable magazine possible . . . then to insure coverage of the maximum number of the best readers.

You can't do that by selling subscriptions — sales costs are high — a large share of the subscribers cancel each year — and no matter how much time, money, and pressure is used

there are always some of the important men who will never buy.

As you can see, the most effective method of getting the kind of coverage advertisers want is (a) to hand-pick the most important men; (b) send the magazine to ALL these men; and (c) to make the magazine so interesting, so valuable that they will want to read it.

That's why . . .

. . . *Chemical Processing* is sent only to qualified readers . . . selected management and technical key-men in the chemical industry; that's why you get *Chemical Processing* free — that's why we spend thousands of dollars on each issue to make it worth your time to read it. For you are an important reader in the chemical processing field.

Chemical Processing

Published by Putman Publishing Company

Creators of PUTMAN-STYLE Magazines

. . . terse, vital editorial; "hand-picked" circulation; square, high-visibility format; quality readership; hence more **READER ACTION**



ENGINEERING & MAINTENANCE

Paints, adhesives won't stick to surfaces protected by strippable coating

When applied to spray booths, recently developed strippable coating prevents paint and adhesives from sticking to walls of booth. Accumulation of sprayed materials can be readily peeled off, saving many man hours of work. Zipcote Spray Booth Protector can also be applied to work tables used for gluing. Material is non-flammable and can be easily applied by brush or spray. Booths or tables are ready for use immediately after application of coating.

(Strippable coating is a product of Adhesive Products Corp., Dept. CP, 1660 Boone Ave., New York 60, N. Y. . . . or for more information check CP 7301 on handy form, pages 2 and 3.)

Maximum allowable stress values for ferrous pipe and tubing

Convenient data card tabulates maximum allowable stress values (S values) of a complete range of seamless and welded carbon, alloy, and stainless steel tubing and pipe. An adaptation of Table P-7 of the new ASME Boiler Code, the card is complete with notes and formulas for calculation of maximum allowable working pressures of tubing and pipe.

TDC 154 is available from Tubular Products Div., The Babcock & Wilcox Co., Dept. CP, Beaver Falls, Pa. When inquiring specify CP 7302 on handy form, pages 2 and 3.

No filling of tank required on hand model LPG blow torch . . .

entire fuel tank is replaced by refill unit

Uses: Complete with all-brass burner and fittings, unit is designed for soldering, light brazing, and similar job and shop work where heavy-duty equipment is not required.

Features: No filling of fuel tank is necessary, because entire tank is replaced by a refill unit as needed.

Description: Hand model blow torch has a factory-set pressure relief valve, wide-range positive-control flame adjustment, ICC approved heavy-gage large-diameter tank for greater stability and easier handling. Compact in size (tank measures 2 7/8" diam x 9-9/16" high), torch is handy because it fits conveniently in tool box or pocket.

Special accessories available to broaden work range include a heavy-duty burner, pointed soldering tip, chisel point soldering tip, and flame spreader.

(Hand model blow torch is a product of The Turner Brass Works, Dept. CP, Sycamore, Ill. . . . or for more information check CP 7303, pages 2 and 3.)

Simple removal of oil and grease provided by line of seven emulsion cleaners . . .

materials act with petroleum solvents like soap acts with water

Uses: For removal of grease and oil from metals and machinery.

Features: Complete line of seven emulsion cleaners offers a simple spray-on method of oil and grease removal. Added in small amounts to petroleum solvents, cleaners act with solvents like soap acts with water. They increase penetrating power of solvents, speed cleaning action, and improve rinsing properties.

Description: Materials included in the emulsion cleaner line are:

1. Airmulso — noncrazing, nonstaining, light-duty material
2. Mulsine — medium-duty material
3. Mulsirex — all-purpose emulsion cleaner
4. Emulsit — acid-stable emulsion cleaner
5. Turco-Klene — heavy-duty emulsion cleaner
6. Emulsoil — heaviest-duty, spray-on emulsion cleaner
7. Borzin — dip tank, extra-heavy-duty emulsion cleaner

(Emulsion cleaners are products of Turco Products, Inc., Dept. CP, 6135 S. Central Ave., Los Angeles 1, Calif. . . . or for more information check CP 7305 on handy form, pages 2 and 3.)

Instant heat when needed offered by electrode used with DC welder

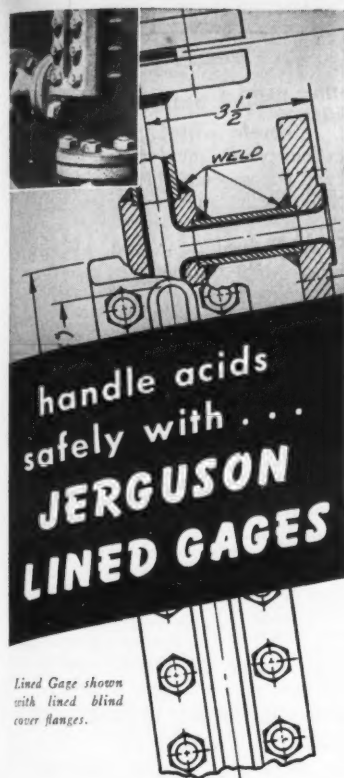
Uses: For quick heating, for annealing, heat treating, softening, burning off paint — for use where an acetylene torch is impractical.

Features: Electrode, called Thermotrode, is not for welding, but rather for a source of instant heat where and when needed. No special equipment is necessary. Electrode is inserted in an ordinary electrode holder of a DC arc welder and is ready to work. Instead of depositing metal, electrode oxidizes it so that core metal disintegrates into a powder easily brushed off.

Description: Electrode's heat cone is said to generate a tremendous amount of heat which may be relayed by maintenance of proper arc distance or by using a circular or weaving motion as rod is applied. Thus it is possible to establish a great heat in short time, yet operate over a wide area.

Product is said to be adapted to practically every phase of welding operation where a concentrated heat source is needed. Electrodes are available in 1/8, 5/32 and, for heavy work, 3/16" diameters.

(Electrode is a product of Eutectic Welding Alloys Corp., Dept. CP, 172nd St. and Northern Blvd., Flushing, N. Y. . . . or for more information check CP 7306 on handy form, pages 2 and 3.)



WHERE concentration of liquids such as sulphuric, muriatic or other acids necessitates equipment with special linings, Jerguson can furnish you with reflex or transparent gages lined with natural and synthetic rubbers, lead, phenolic base compounds, Teflon, and other materials. Jerguson Lined Gages are designed to meet your requirements of long-life and dependable operation.

To meet your constantly increasing variety of demands, Jerguson engineers, working closely with the men in the Chemical and Petrochemical Fields, have developed a complete line of sound, dependable liquid level gages, valves, and specialties in various metals and synthetics to handle corrosive liquids and gases.

Jerguson Gages keep you out of trouble, and they save you time and money. Send for drawing GD-431 on Lined Gages, or send your requirements.



When inquiring check CP 7304 on handy form, pgs. 2-3

Never before such response!

"Since we announced the new MCR fingertip control filter the response has been tremendous," says A. C. Kracklauer, president of Sparkler Mfg. Co. "Never before has the trade shown so much interest in the announcement of a Sparkler product."



Model MCR

60 second opening without disconnecting piping. Available in sizes from 100 to 2000 sq. ft. of filtering area. Filter cake can be removed in a semi-dry state by hand scraping or in some cases merely tapping the plates to let the cake fall into the portable disposal receptacle.

One man can handle the complete cleaning operation in ten minutes. One movement of a handle to release head bolts, a flip of a switch and the tank moves back, stopping automatically, exposing the plates in less than 60 seconds. Pipe connections are all in the stationary head, so no disconnecting of piping is required. This gives you the fastest action, time-saving, labor-saving tank opening ever engineered in a filter.

Jet pressure spray tubes can be supplied in this filter for washing off cake or in combination with backwashing when the material filtered and sewer conditions permit this type of cleaning.

Filter tanks can be supplied in mild steel, stainless steel, Hastelloy or other metals to meet requirements.

Ten exclusive features

1. Large flow volume—large plate area up to 2000 sq. ft. and 1 ton cake.
2. One man fingertip operation.
3. No pipe lines to break in opening filter.
4. Filter seal of plates not broken in cleaning.
5. Self sealing cover gasket.
6. Dry cake disposal or flush down cleaning.
7. No head room required above filter.
8. Complete plate drainage.
9. Uniform precoat.
10. Quick opening cover.



European Plant: Sparkler International Ltd., Prinsengracht 876, Amsterdam, Holland.
Canadian Plant: Sparkler International Ltd., Galt, Ontario, Canada.

When inquiring check CP 7307 on handy form, pgs. 2-3

TF



Caps are part of the story



The announcement of the WeldELL line, back in 1931, created a considerable sensation in the piping field. Pipe welding was then just beginning to emerge from the crude, cut-fit-patch stage and the only welding fittings then in use were simply elbows.

But here was a *full line* of welding fittings—not only the long and short radius ells, but also full branch and reducing tees, concentric and eccentric reducers, stub ends, welding neck flanges . . . even caps!

You know what happened: The WeldELL line had taken pipe welding out of darkness into light . . . had provided the impetus and set the pattern of modern pipe welding practice.

Yes, the WeldELL line was the first complete line—the first engineered line . . . and the fittings that showed the way are still showing the way. For up-to-the-minute facts about the WeldELL line see your Taylor Forge Distributor.

TAYLOR FORGE

TAYLOR FORGE & PIPE WORKS

General Offices and Works: P. O. Box 485, Chicago 90, Illinois
Offices in all principal cities • Plants at: Carnegie, Pa.; Fontana, Calif.; Gary, Ind.; Hamilton, Ont., Can.

When inquiring check CP 7308 on handy form, pgs. 2-3

ENGINEERING & MAINTENANCE

Transparent coating used as primer and finish

Bulletin describes transparent liquid coating which penetrates, seals and waterproofs concrete, mortar, brick, steel and wood. It can be used for both primer and finish coat. Odorless when dry, coating can be sprayed, brushed or dipped. When sprayed on freshly poured concrete, it is curing agent, obviating need of covering and wetting the concrete during curing.

Bul 104 is issued by Delrac Corp., Dept. CP, Watertown, N. Y. When inquiring specify CP 7309 on handy form, pages 2 and 3.

More resistance, easier handling featured by pre-formed pipe insulation . . .

for use at temperatures from sub-zero to 450°F

Uses: As a pipe insulation.

Features: This finer fibered, pre-formed pipe insulation is said to include all advantages of product which it replaces, plus more resistance to abuse, easier handling, and improved thermal efficiency.

Description: For use at temperatures from sub-zero to 450°F, insulation is available with canvas coverings, vapor seal jackets for cold lines, and with a waterproof roofing felt jacket for outdoor use.

Thermal conductivity of fine fibered insulation is said to have been improved about 5% over that of old product.

Insulation is durable, fire-safe, non-corrosive, moisture-resistant, easily fabricated, resilient, and provides no sustenance for insects, mold growth, or vermin, according to manufacturer.

(Pipe insulation is a product of Owens-Corning Fiberglas Corp., Dept. CP, 1833 Nicholas Bldg., Toledo 1, Ohio . . . or for more information check CP 7310 on handy form, pages 2 and 3.)

Inexpensive tools vibrating at speeds to 30,000 cps cut hard materials

Uses: For precision cutting of hard or brittle materials, either ferrous or non-ferrous.

Features: Machine utilizes inexpensive tools (such as soft steel.)

Description: With the Cavitron machine tool, operation is accomplished by use of an ultrasonic tool head vibrating from 18,000 to 30,000 cps. A fine surface is obtained, and there is no local heating of work surface, or chemical or physical change in work piece.

(Cavitron machine tool is a product of The Sheffield Corp., Dept. CP, Springfield & Thomas St., Dayton 1, Ohio . . . or for more information check CP 7311 on handy form, pages 2 and 3.)

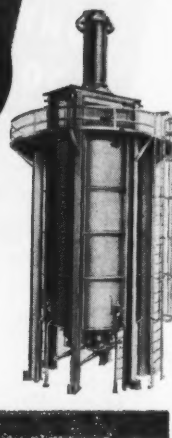
- ★ For Direct Heating of Liquids and Vapors
- ★ Indirect Heating Systems Using Circulating Medium

Struthers Wells FIRED HEATERS for the Process Industries

Struthers Wells direct fired heaters are available in sizes from 100,000 to 25,000,000 BTU per hour, for heating gasoline, oils or asphalts, superheating steam or gas, and for indirect heating systems.

Struthers Wells indirect heating systems give economical—trouble-free operation at temperatures to 750° F., or above.

If your process requires temperatures above those of existing steam supply—if steam is not available, or if the process can be improved by higher temperatures, investigate this simple and economical equipment.

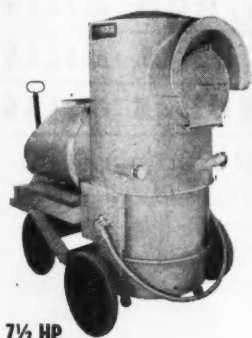


Struthers
Wells

STRUTHERS WELLS CORPORATION Warren, Pa.

PLANTS AT WARREN, PA. • TITUSVILLE, PA.
Offices in Principal Cities

When inquiring check CP 7312 on handy form, pgs. 2-3



7½ HP

FOR THE BIG CLEANING JOBS IN INDUSTRY

This is the new heavy duty Spencer Portable Vacuum cleaner, reduced in height so that it will go through any factory door or onto most elevators. Its 7½ HP will supply more than enough vacuum power for two operators working at once. The dirt capacity is large—removable can rolls on casters. It will pick up heavy metals, reclaim foundry sand, remove hot materials and clean the largest factory areas in record time. Smaller machines for office and normal industrial service. Ask for Bulletin No. 102 and 112.

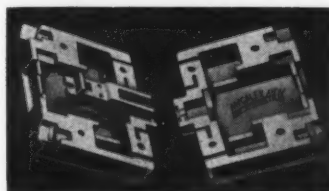
THE SPENCER TURBINE COMPANY • HARTFORD 6, CONNECTICUT
SPENCER
HARTFORD 466-M

When inquiring check CP 7313 on handy form, pgs. 2-3

MAINTENANCE

Burned-insulation failure eliminated by mica switch housing

Custom-molded switch housing designed primarily for airborne applications has been recently announced. Unit is molded of manufacturer's 410X glass-bonded mica. Material is said to have immunity to repeated flashing. In addition, it is reported that no



Switch housing has dimensional stability at temps to 650° F

carbon path is formed in tests using glass-bonded mica. Other advantages claimed are closely dimensioned intricate functional designs, high dielectric strength, zero moisture absorption, and permanent dimensional stability at temperatures up to 650° F.

(Switch housing is a product of Mycalex Corp. of America, Dept. CP, 60 Clifton Blvd., Clifton, N. J. . . . or for more information check CP 7314 on handy form, pages two and three.)

DC motors and generators presented in bulletin

Fully illustrated bulletin presents details of DC construction, available DC motor enclosures for different operating conditions, DC motor applications and special DC designs of manufacturer's line of DC motors, ½ to 300 hp and DC generators, ¾ to 250 kw. A section is included on motor-generator sets for converting AC to DC in industrial service. Motor starter information is given as well as data on DC adjustable speed applications.

Bul 1450 is issued by The Louis Allis Co., Dept. CP, Lou & Skid St., Milwaukee 7, Wis. When inquiring specify CP 7315 on convenient Reader Service slip, pages 2 and 3.

NO SHAFT DEFLECTION..

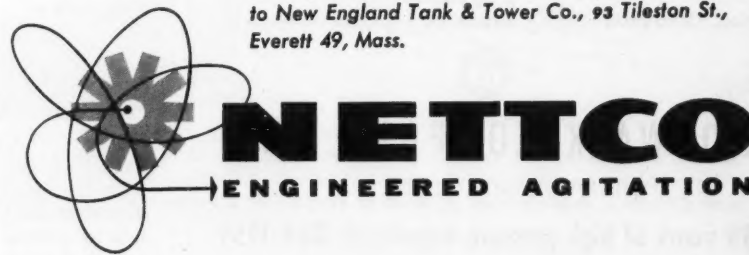
...WAS ONLY ONE OF
THE PROBLEMS!



A prominent Mid-West chemical process company put this problem up to Nettco: "Build a bottom-entering agitator to mix acids and solvents at temperatures up to 600° F. Select, specify, and help engineer a shaft seal to withstand high-temperature acids and seal the tank against low absolute pressures of 1 mm. Hg. Supply an agitator drive which can live under high ambient temperatures. Guarantee operational efficiency."

Nettco answered the problem with this bottom-entering agitator — the product of Nettco equipment plus Nettco engineering. Deflection-free operation of the solid shaft, vital to the performance of the mechanical shaft seal, was insured by the heavy-duty anti-friction bearings in the Model WT-27 Drive. All agitator components were carefully selected from our extensive line of standard units by the Nettco engineering staff to answer these difficult operational specifications.

Let Nettco help solve your agitating problems!
Send specifications for engineered recommendations
to New England Tank & Tower Co., 93 Tileston St.,
Everett 49, Mass.

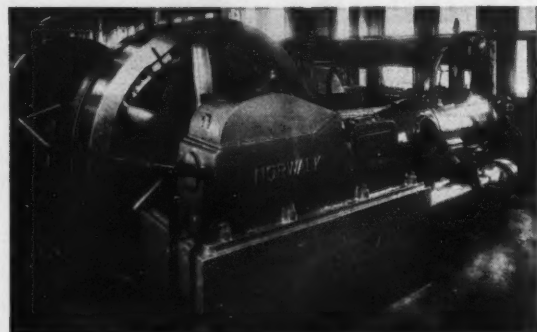


When inquiring check CP 7316 on handy form, pgs. 2-3

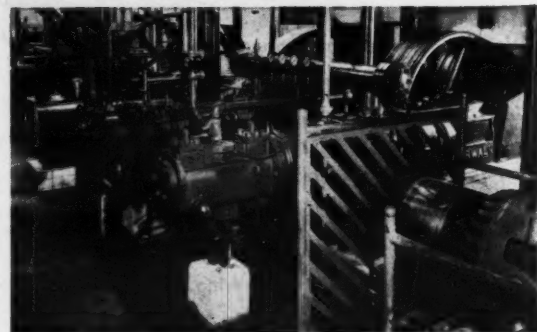
3 HIGH PRESSURE COMPRESSORS



4 Stage Norwalk Compressor in Liquification Plant



4 Stage Norwalk Compressor in Steel Plant



4 Stage Duplex Norwalk Compressor in Dry Ice Plant

Norwalk compressors are built to individual specifications, range from single stage to five and six stages with pressures up to 25,000 pounds. Each compressor is test-run for eight hours at the factory to assure efficient, trouble-free operation. Descriptive catalog forwarded promptly on request.



NORWALK COMPANY, INC.

SOUTH NORWALK, CONNECTICUT

90 years of high pressure experience 1864-1954

When inquiring check CP 7317 on handy form, pgs. 2-3

182

ENGINEERING & MAINTENANCE

**Clean-up time reduced 50%
by release agent for
adhesives, coatings**

Uses: Prevents adhesives, lacquers, resins, paints, or other coating materials from adhering to walls of pots, tanks, rollers, shafts, feed tables, and other exposed surfaces.

Features: Repeated testing is said to have shown that Release-Cote will reduce clean-up time by at least 50%, because it prevents build-up of adhesives on journals and side scrapers. When adhesive dries it may be easily peeled off. This reduces downtime and increases production by eliminating long cleaning periods.

Description: Material is easy to apply. Before machine is filled with adhesive, a film of Release-Cote is applied to all exposed surfaces (except applicator rollers) with brush, rag, sponge, or spray equipment. Coated areas can be quickly cleaned with water rinse.

Rubbing small amount of material on hands prevents adhesive from sticking to skin. Release agent has no harmful irritants, fumes, or offensive odors. Material is supplied in quarts and one and five gallon drums.

(Release agent is a product of Potdevin Machine Co., Dept. CP, 285 North Street, Teterboro, N. J. . . . or for more information check CP 7318 on handy form, pages 2 and 3.)

**Combine metal spraying, torch fusing
to form super-hard surfaces**

Simplicity, versatility of applications and improvement in service life of parts treated are claimed for process of applying hard surfaces to metal, described in 4-page, illustrated bulletin. Results obtained in use on agitator shafts, rolling mill guides, deep well pump rods plus other possible uses and mechanics of applying coating are outlined.

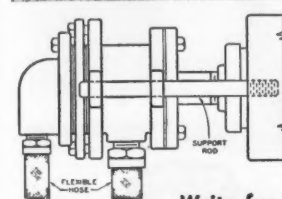
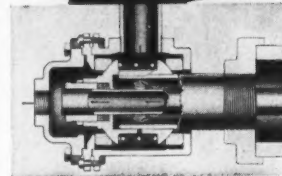
Bulletin 53B is available from Metallizing Engineering Co., Dept. CP, 38-14 30th St., Long Island City, N. Y. When inquiring specify CP 7319 on handy form, pages 2 and 3.

**Independent function, few levers
Identify steam turbine
stop valve . . .**

unit can be incorporated in old style body

Uses: As an excess speed safety stop valve for manufacturer's line of steam turbines.

Features: Valve functions independently of constant-speed governor and eliminates levers between safety-trip mechanism and shut-off valve. Valve stem does not protrude outside valve body, a feature said to prevent stickiness arising from boiler compound or other foreign matter in steam.



Write for all the facts about the LN

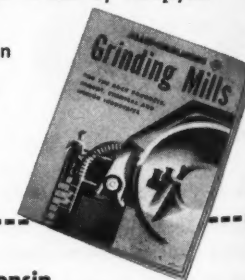
The Johnson Corporation
826 Wood St., Three Rivers, Mich.

When inquiring check CP 7320 on handy form, pgs. 2-3

Get Complete Facts On... ROD MILLS BALL MILLS PEBBLE MILLS

Write for this useful 44 page book, bulletin 07B6718A. Full of helpful facts on:

- Grinding media action
- Mill applications
- Wet vs dry grinding
- Grinding circuits
- Critical mill speeds
- Grindability indices



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Milwaukee 1, Wisconsin

Company.....
Attention of.....
Address.....
City..... State.....
A-4300

ALLIS-CHALMERS

When inquiring check CP 7321 on handy form, pgs. 2-3

CHEMICAL PROCESSING

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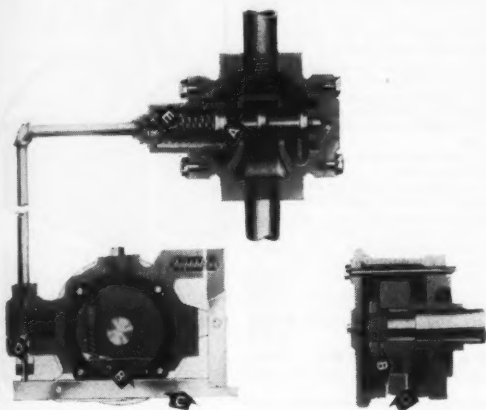
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MARCI

Description: Complete enclosure of valve eliminates accidental damage from outside. Unit can be incorporated in old style valve bodies. Operation is as follows: when turbine is operating, lever (C) is horizontal, pilot valve (D) is closed, and valve (A) is held open by spring (E). When excess speed is



reached centrifugal force throws weight (B) against lever, opening pilot valve. This relieves pressure back of valve, unbalancing and closing it immediately, compressing spring and shutting off steam supply to turbine. When lever is manually reset, pilot valve closes, allowing pressure to build up back of valve, restoring balance. Spring then opens valve, admitting steam to turbine.

(Safety stop valve is a product of Coppus Engineering Corp., Dept. CP, 341 Park Ave., Worcester 2, Mass. . . . or for more information check CP 7322 on handy form, pages 2 and 3.)

Quick, easy removal of plastic from porous or semi-porous molds feature of release agent . . .

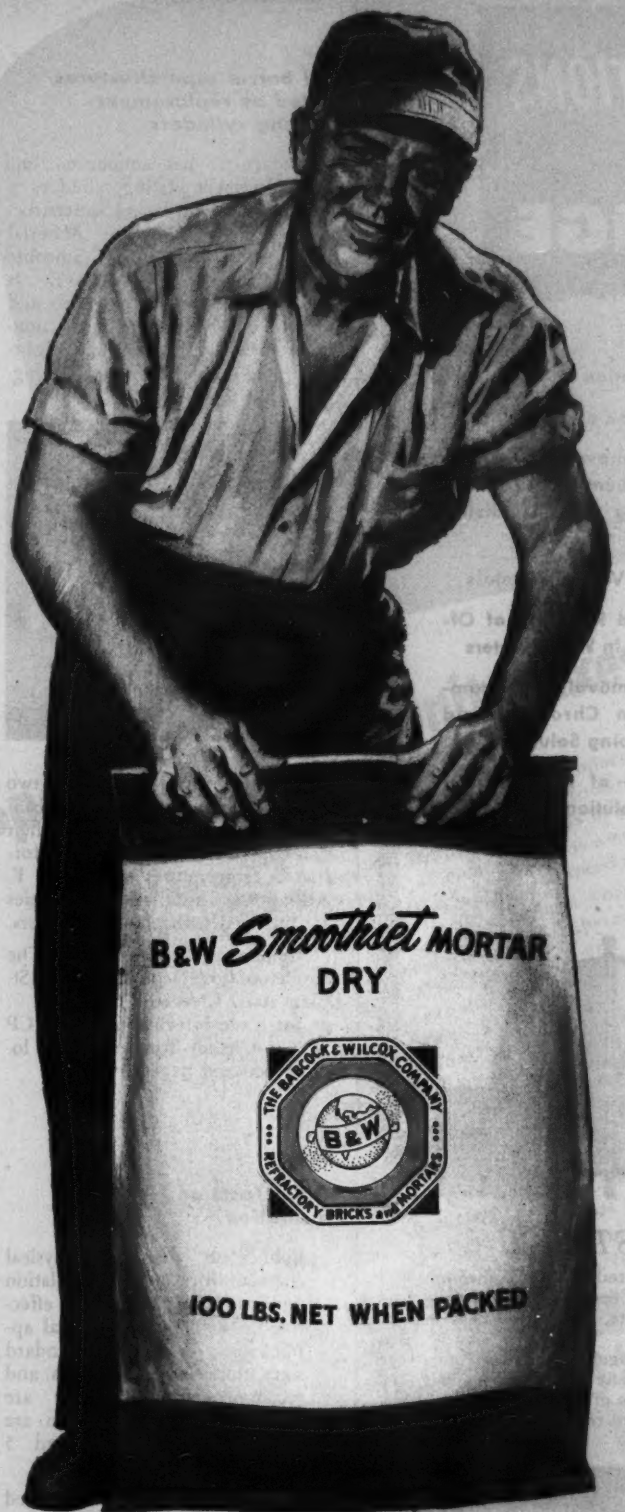
permits fast molding cycle for polyester and epoxy resins

Uses: As a release agent for polyester and epoxy resin plastics when using porous or semi-porous molds, such as wood, plaster of Paris, polyester-fiber-glass, or aluminum.

Features: Agent helps make fast molding cycles possible. Parts are easily and quickly removed from mold. Material is quick drying and insoluble in common resins. It does not interfere with cure time of plastic. With aluminum molds, agent also gives a smoother finished product.

Description: Mold Release B-2 is a high melting, synthetic, wax-like material. It is supplied in paste form and should not be diluted. Applied with cloth or brush, agent can be rubbed to a thin coating.

(Mold Release B-2 is a product of Chemical Development Corp., Dept. CP, Danvers, Mass. . . . check CP 7323 on handy form, pages 2 and 3.)



B&W REFRACTORIES PRODUCTS—B&W Allmetal Firebrick • B&W 80 Firebrick • B&W Junior Firebrick • B&W Insulating Firebrick
B&W Refractory Castables, Plastics and Mortars • **OTHER B&W PRODUCTS**—Stationary & Marine Boilers and Component Equipment...
Chemical Recovery Units . . . Seamless & Welded Tubes . . . Pulverizers . . . Fuel Burning Equipment . . . Pressure Vessels . . . Alloy Castings

Now!

B&W

SMOOTHSET

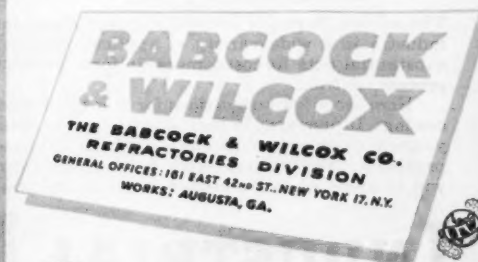
**Available
in Dry Form**

Here's the mortar refractories masons asked for—and it's as easy to use with insulating firebrick as the popular wet B&W Smoothset because it has the same high water retention.

This property is important because the highly porous structure of insulating firebrick draws the moisture rapidly from the mortar, thus allowing too short a time for proper placing and setting of the brick before most mortars become unworkable.

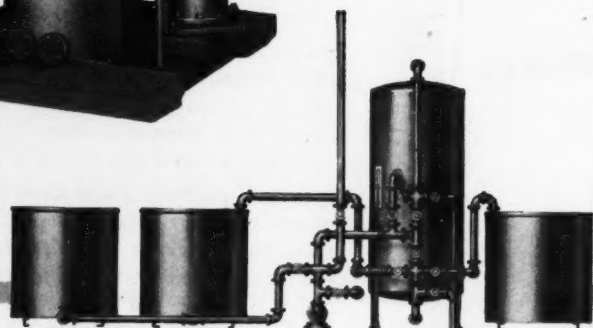
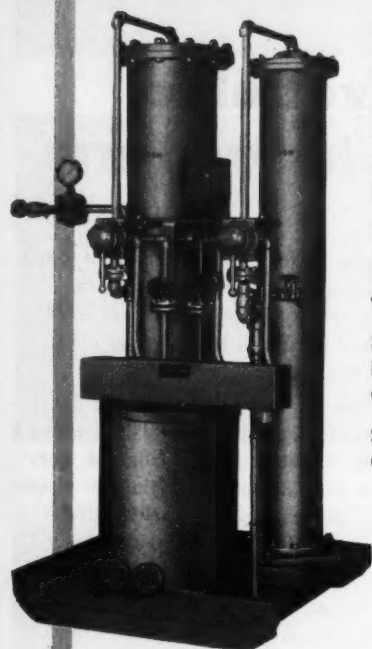
Besides high water retention, the new dry B&W Smoothset can be stored indefinitely in a dry place without hardening—a big advantage on large jobs when refractories are installed over a long period of time.

In addition to helping you select the most economical refractories, your local B&W Refractories Engineer will be glad to help you select the best mortar for your installation. Next time you build or reline your furnace, get the benefit of his long experience



When inquiring check CP 7324 on handy form, pgs. 2-3

PRACTICAL APPLICATIONS OF ION EXCHANGE



Demineralization of Water
Deacidification of Solutions
Selective Removal of Troublesome Constituents from Chromic Acid, Plating and Anodizing Baths
Recovery of Valuable Metals
Removal and Recovery of Offending Ions in Waste Waters
Selective Removal of Contaminants from Chromic Acid Copper Stripping Solution
Substitution of Anions and Cations in Solutions

Get Details from INDUSTRIAL

The success stories of ion exchange are not isolated cases. All through industry in a wide variety of applications, ion exchange is effecting substantial cuts in costs, more uniform products, and a new ease in process control.

Here are a few suggestions for you to check against your own processing. INDUSTRIAL is glad to give you the benefit of its experience if you will outline your requirements. An estimate of probable savings, production, approximate costs, and the equipment required will enable you to know what ion exchange can do for you.

4946

INDUSTRIAL

FILTER & PUMP MFG. CO.

5908 Ogden Avenue • Chicago 50, Illinois

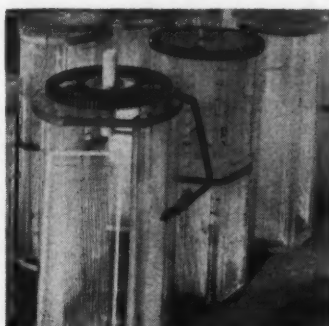
PRESSURE FILTERS
DEMINERALIZERS
RUBBER LININGS
HEAT EXCHANGERS
CENTRIFUGAL PUMPS

When inquiring check CP 7325 on handy form, pgs. 2-3

MAINTENANCE

All barrel superstructures fitted by replacement plating cylinders

Manufacturer has announced line of replacement plating cylinders to fit all makes of barrel superstructures whether old or new. Material used in cylinders is H-T Sincolite (H-T Lucite and Plexiglas). It is said to be resistant to acids and alkalis, non-deteriorating and non-contaminating, transparent, lightweight, rugged, and long lasting.



Replacement units consist of two heads, six heavy rails and five panels. They are said to hold their shape permanently without distortion in temperatures up to 200° F. All necessary installation accessories are included with plating cylinders.

(Cylinders are a product of The Singleton Co., Dept. CP, 5317 St. Clair Ave., Cleveland, Ohio . . . or for more information check CP 7326 on handy form which is located between pages 2 and 3.)

Gives facts on Insulation

Publication describes physical characteristics of pipe insulation and heat insulating blocks, effective up to 1200° F. Typical applications, K factors, standard sizes, thicknesses and forms, and recommended thicknesses are given. In 8-page bulletin are 12 photos, 3 graphs, and 5 charts.

Bul "Kaylo Insulation" is issued by Owens-Corning Fiberglas Corp., Dept. CP, 1831 Nicholson Bldg., Toledo 1, Ohio. When inquiring specify CP 7327 on handy form, pages 2 and 3.

HOW TO HANDLE DRUM FLUIDS faster!

WORKS DOZENS OF WAYS!

Handiest piece of equipment in the plant! That's what they say at scores of plants where this Fast-Flo Drum Pump is used. It's a really versatile worker . . . has dozens of specific uses. Here are just a few ways it will work for you:

- For transferring fluids cleanly and safely from upright original drums.
- For supplying or adding fluids to production lines, direct from original drums.
- For agitation and mixing in closed drums.
- For injecting fluids such as cutting oil at high pressure.
- For intermittent spraying of lacquers, varnishes and other light coatings.

Fast-Flo is surprisingly low in cost . . . air-operated . . . easy to handle . . . and rugged! You get double-action, high volume, controlled delivery, wherever you use it. Write today for the new Fast-Flo Idea Book which tells you where and how this pump can save you money.

GRAY COMPANY, INC.
32 Grace Square, Minneapolis 13, Minn.

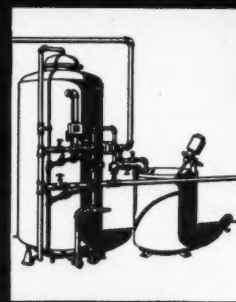


GRACO Fast-Flo DRUM PUMP

Regional Offices: New York, Philadelphia, Detroit, Atlanta, Chicago, San Francisco

When inquiring check CP 7328 on handy form, pgs. 2-3

Mixed-Bed Ultra Delonizer



**REMOVES
ALL MINERAL
IMPURITIES
FROM WATER
for as little as
18c per
1000 gallons**

The Elgin Ultra-DeIonizer produces water of even higher quality than obtained by distillation or evaporation at a mere fraction of the cost. It is a compact, easy to operate unit which requires very little space. Containing a mixture of cation and anion exchange resins in a single tank, it is low in investment and operating cost. Ask for Bulletin 512.

ELGIN-REFINITE

DIVISION OF ELGIN SOFTENER CORPORATION
180 NORTH GROVE AVENUE, ELGIN, ILLINOIS

OTHER PRODUCTS Softeners • Dealkalizers • Lime Soda Softeners
Write for Bulletins • Deaerating Heaters • Filters • Treatment

When inquiring check CP 7329 on handy form, pgs. 2-3

CHEMICAL PROCESSING

**Lightweight, washable material
may be used as filter cloth
or abrasive backing . . .**

non-woven fabric is chemical resistant and has desirable qualities of nylon

Uses: Suggested uses include gaskets, filters, backing for abrasives, etc.

Features: Non-woven fabric, called Nylon Texstar, is said to have all desirable qualities of nylon. In filtering field, it shows resistance to strong chemicals. It has necessary strength for use as a backing material.

Description: Lightweight material has high tear strength, is completely washable, stitches, and is equally strong wet or dry. It can be made soft or stiff, light or heavy, as specified, and is being produced in a standard 38" width.

(Fabric is produced by Star Woolen Co., Dept. CP, Cohoes, N. Y. . . . or for more information check CP 7330 on handy form, pages 2 and 3.)

**Applications of oxidation catalysts
in the petroleum industry**

Promotion of catalytic oxidation units for use in the petroleum industry has been announced. Units would find application in recovery of heat from waste cracking gases, and abatement of smog and other nuisances resulting from objectionable refinery fumes.

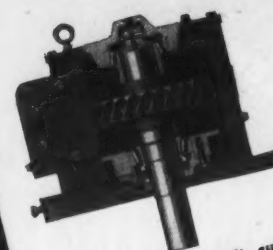
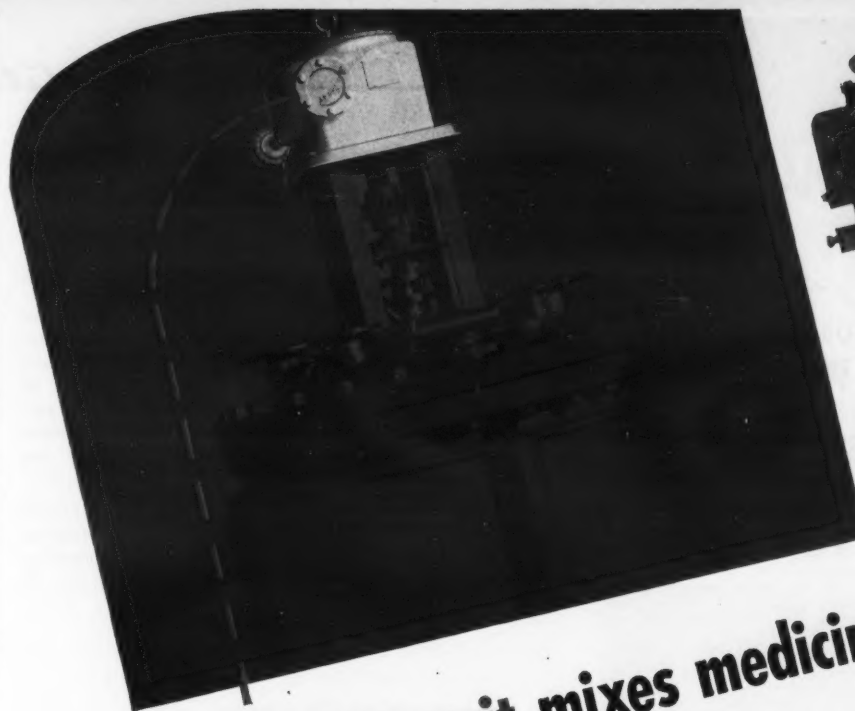
Each catalytic oxidation unit consists of ceramic sticks, approximately six inches long, coated with an active platinum base film. Sticks are spaced in staggered rows between three inch square ceramic plates. Oxidation occurs at the surface of sticks as gases flow through unit with negligible drop in pressure.

(Oxidation catalysts, manufactured by Oxy-catalyst, Inc., Dept. CP, Wayne, Ind., will be promoted in the petroleum industry by Houdry Process Corp., Dept. CP, 1528 Walnut St., Philadelphia 2, Pa. . . . or check CP 7331 on convenient Reader Service slip, pages 2 and 3.)

**How and why of vaporsealing
shown in 80-page book**

Complete recommendations for vaporsealing insulation on low temperature vessels are given in 80-page, edition-bound volume containing 54 illustrations. Book shows how and where vapor-seal should be applied over thermal insulation. The three major classes of insulation are covered. Designed for guidance of chemical and design engineers, book discusses and illustrates the vapor-sealing of every chemical vessel detail from tanks and pipes to valves and flanges.

"Vapor and Weather Barriers for Low Temperature Installations" is available on letterhead request to The Insul-Mastic Corp. of America, Dept. CP, 1141 Oliver Bldg., Pittsburgh 22, Pa.



The Cleveland ND unit, cut away to show tapered roller bearings on gear shaft, piston face-type oil seal, piston type lubricating pump and oil drain at base of housing. At left—Cleveland size 50 ND unit on pressure mixing tank built by C. E. Howard Corporation, South Gate, Calif.

Space-saving ND unit mixes medicines smoothly

NOW at work in the production laboratories of a large drug company, this Howard pressurized, stainless steel agitator handles thousands of gallons of medicinal liquids. Smooth, efficient mixing is assured by the powerful drive—a Cleveland worm gear speed reducer mounted on the tank.

Heart of the Cleveland worm gear speed reducer is a case hardened steel worm operating on a low friction bronze gear. Materials, design and workmanship combine to provide year-after-year dependability under severest operating conditions. Easily installed on old as well as new equipment, Cleavelands are known throughout the chemical and associated industries as the long-wearing reliable drive.

The ND drive shown here and its companion NU unit (drive shaft upward) are available in seven sizes each. For complete descriptions, capacity charts and other engineering data on these space-saving, powerful Cleavelands, write today for free new Catalog 400. The Cleveland Worm & Gear Company, 3257 East 80th Street, Cleveland 4, Ohio.

Affiliate: The Farval Corporation, Centralized Systems of Lubrication. In Canada: Peacock Brothers Limited.



CLEVELAND

Worm Gear

Speed Reducers

When inquiring check CP 7332 on handy form, pgs. 2-3

AGILENE

AGILIDE

The Most Economical Answer

TO YOUR CORROSION PROBLEMS IN CHEMICAL PROCESS EQUIPMENT

Agile's high-grade thermoplastic construction materials—AGILENE and AGILIDE—fabricated by a combination of forming and welding processes in which we specialize, are your safeguard for an economical and properly engineered installation.



AGILE CENTRIFUGAL VENTILATING FANS FOR EXHAUSTING ACID VAPORS

are now available in AGILENE (polyethylene) and AGILIDE (non-plasticized polyvinyl chloride). They are of Hot Gas Welded construction and are chemically resistant to a wide variety of corrosive fumes and vapors. These fans are designed in accordance with sound ventilating principles and follow closely the construction of metal ventilators. Five sizes are available ranging from 270 to 1670 c.f.m. Larger sizes will be made upon request.

SEND YOUR INQUIRIES TO



American Agile Corporation

Plant and General Offices • 348T Durham Rd., Maple Heights, Ohio
Mailing Address, P. O. Box 168 • Bedford, Ohio

DEPT. C-1

When inquiring check CP 7333 on handy form, pgs. 2-3

New Literature

Data on masonry coatings

Masonry surface coatings based on vinyl resins, Bakelite polystyrene latex, and phenolic resins are described in 8-page brochure. Used on concrete, stucco, cinder block, brick, plaster and porcelain surfaces, coatings are said to resist effects of weather, acids, alkalis, foodstuffs, oils, and grease. Application is made by spraying, brushing, or roller-coating. Finished surfaces are cleaned by washing with water.

Bul VC is issued by Bakelite Co., Div. of Union Carbide & Carbon Corp., Dept. CP, 300 Madison Ave., New York 17, N. Y. When inquiring specify CP 7334 on handy form, pages 2 and 3.

Tank-stored distilled water protected by air filter

Distilled water being kept in storage tanks can be protected against contamination by airborne bacteria, dust, alkali or acid gases, and carbon dioxide, by using Ventgard air filter. Bulletin describes operation and shows construction.

Filter is easily installed. Cartridge should be changed every 90 days or after use of every 1000 gal of distilled water.

Bulletin 128 is issued by Barnstead Still and Sterilizer Co., Dept. CP, 2 Lanesville Terrace, Boston 31, Massachusetts. When inquiring specify CP 7335 on handy form, pages 2 and 3.

Shows advantages of worm gears and speed reducers

Brochure contains typical applications of double-enveloping worm gear sets and speed reducers in equipment for petroleum refining, chemical processing, food production and packaging, plastics and resin production. Design and cost-cutting values of units are described and illustrated.

Bul FCP-53 is available from Cone-Drive Gears, Div. Michigan Tool Co., Dept. CP, 7171 E. McNichols Rd., Detroit 12, Mich. When inquiring specify CP 7336 on handy form, pages 2 & 3.

Gives data on gas lift truck with electric transmission

Publication of manufacturer's new and revised, condensed catalog covering electric driven in-

dustrial trucks has been announced.

For the first time, catalog includes data on the first gas fork lift truck (Dynamotive) with electric transmission.

Representative models of manufacturer's riding-type and driver-led electric trucks are described in the four page, two color brochure.

Revised, condensed catalog on Dynamotive is issued by Automatic Transportation Co., Dept. CP, 149 W. 87th St., Chicago 20, Ill. When inquiring specify CP 7337, pages 2 and 3.

Displays line of gate valves

Gate valves designed to permit disassembly and reassembly without removal from line are described in 4-page illustrated circular. Valves feature large drain channels that reduce bonnet chamber clogging in handling congealing fluids and cast bronze thread bushings, integral with the bonnet assuring perfect stem alignment.

Circular 561 is available from The Lunkenheimer Co., Dept. CP, Box 360, Cincinnati 14, Ohio. Specify CP 7338, pages 2 and 3.

Data folder on pipes and tubing for high-temperature service

Folder presents technical data on 14 tubing steels used in high-temperature or high-pressure service. Data on analyses, mechanical and physical properties, creep strength, oxidation resistance, and other information is presented on a complete series of tubing steels ranging from plain low-carbon to 25% chromium-20% nickel stainless steel.

Bul TDC 163 is issued by Babcock & Wilcox Co., Tubular Products Div., Dept. CP, Beaver Falls, Pa. Specify CP 7339, pages 2 and 3.

Gives comprehensive listing of low-temp steel literature

Reference booklet, "Bibliography on Low Temperature Characteristics of Steels, 1904-June 1953", contains 48 pages. It lists chronologically, 468 US and foreign magazine articles, translation, pamphlets, and books on the subject. Alphabetical author index increases its usefulness.

Bul A-157 is available from International Nickel Co., Dept. CP, 67 Wall St., New York 5, N. Y. Specify CP 7340, pages 2 and 3.

Heat and corrosion resistance of nickel chrome castings

Bulletin on HR-3 (37% Ni — 17% Cr) is for reference use by designers and engineers for parts subject to corrosive elements and high temperatures. Chemical and physical properties, heat and corrosion properties, and design stresses are covered. Machinability, weldability and recommended heat treatment are also given in detail.

Bul 1 is available from Standard Alloy Co., Inc., Dept. CP, 1679 Collamer Rd., Cleveland 10, Ohio. When inquiring specify CP 7341 on handy form, pages 2 and 3.

Gasketless filter presses handle 100-50,000 gph

Industrial filter presses, requiring no gaskets, and capable of handling 100 to 50,000 gph at zero to 450°F and 75 psi, are described in bulletin. Units are illustrated and construction specifications are included. Presses are available in stainless steel, aluminum, monel, or bronze.

Bul 17 is issued by Brosites Products Corporation, Dept. CP, 50 Church Street, New York 7, N. Y. Specify CP 7342 pages 2 and 3.

Maximum flexibility featured in continuous centrifugals

Bulletin gives features and general specifications of manufacturer's continuous centrifugal. Features include variable beach speeds and pool depths, centrifugal force field which can be varied up to almost 2000 time gravity, self-cleaning feed chambers, and full ball and roller bearings. Materials of construction include any alloy which can be fabricated by normal shop methods. Machines are available in two sizes: 18" diam x 28", and 24" diam x 38".

Bulletin TC-10-53 is issued by Tolhurst Centrifugals, Division of American Machine and Metals, Inc., Dept. CP, 48 Thomas Street, East Moline, Illinois. When inquiring specify CP 7343 on handy form, pages 2 and 3.

Explains explosion hazards in fuel burners

A non-technical explanation of the explosion danger inherent in fuel burning equipment and the protection available is offered in the bulletin. It shows how to determine whether fuel burners are adequately protected against explosion and briefly describes protective equipment. Fireye Bul CP21 is issued by Dept. NB-8 Combustion Control Corp., Dept. CP, 718 Beacon St., Boston 15, Mass. Check CP 7344 on pages 2 and 3.

IT FLOATS ON THE LOAD! *

You turn on the steam.

This little stainless steel valve—the only moving part in the Yarway Impulse Steam Trap installed on the equipment—opens wide and stays open as the air and condensate continuously pour through.

The equipment reaches production temperature in the quickest possible time.

Production temperature reached, the little valve snaps shut. After that, by a pulsating action, it discharges all condensate as it forms—even a tiny teaspoonful. *There's hot steam in the equipment all the time . . . steady, maximum temperatures are maintained.*

It all adds up—to more production per day.

Other profit-making features of the Yarway Impulse Steam Trap—low initial cost, easy installation, stainless steel construction, low maintenance, good for all pressures, quick delivery from over 200 local industrial distributors.

Try a Yarway—free for 60 days—and prove its advantage. Your distributor will supply you.

For free Yarway Impulse Steam Trap Bulletin T-1740, write . . .

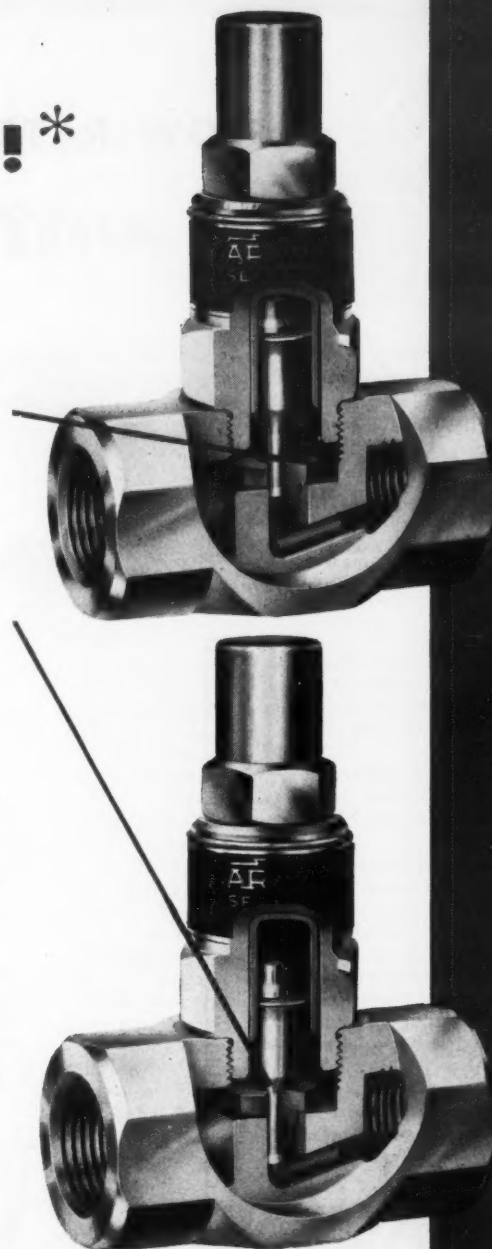
YARNALL-WARING COMPANY

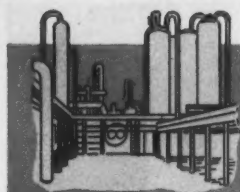
125 Mermaid Ave., Philadelphia 18, Pa.

* . . resulting in fast heat-up of equipment, more production per day.

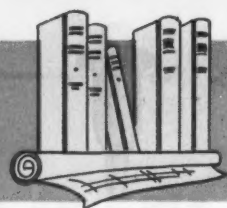
YARWAY / impulse steam trap

When inquiring check CP 7345 on handy form, pgs. 2-3





Processing and Engineering Data



73

FLOW RATE CONVERSION

By ROBERT HLAVIN

Long Beach, Calif.

A frequent problem, conversion of fluid flow rates from pounds per hour to gallons per minute, is solved swiftly and accurately by this nomograph. Based on the equation —

$$\text{gpm} = \frac{R}{500\rho}$$

where —

gpm = gallons per minute

R = mass rate

ρ = specific gravity at flow temp

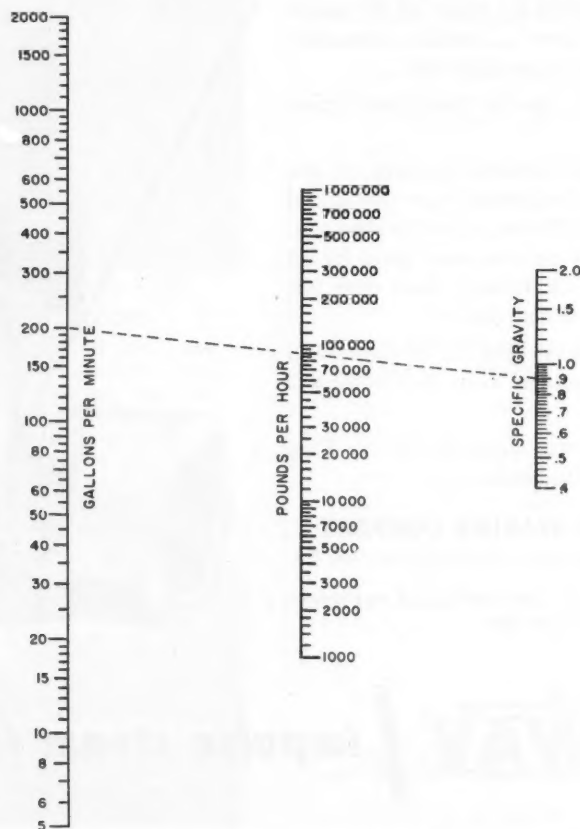
gpm
lb/hr

— nomograph can be used in sizing pipe lines, vessels, pumps, etc.

Typical Examples

Ethyl alcohol-water solution is fed to a rectifying column at 90,000 pounds per hour. Specific gravity at operating temperature is 0.90. What is the gallon per minute rate?

Connect 0.90 and 90,000 on appropriate scales. Read 200 gpm as flow rate.



Chemical Processing, March 1954

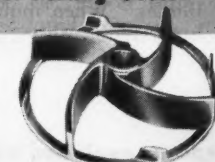
NOW
STANDARDIZED
for 90% of all mixing jobs
LOW INVESTMENT
HIGH VERSATILITY
QUICK DELIVERY
plus



The New **PATTERSON**
Unimixer

For efficient processing of liquids and light pastes—at Lower Mixing Costs!

Easy to Buy—
Easy to Use!
Write for details now.



Patterson Unimixer
Turbine

The Patterson Foundry and Machine Company
East Liverpool, Ohio, U. S. A.

The Patterson Foundry and Machine Company, (Canada) Limited
Toronto, Canada

When inquiring check CP 7346 on handy form, pgs. 2-3

CHEMICAL PROCESSING

Ion exchange technology, uses outlined in bulletin

For the novice or for those in need of a refresher course, 16-page illustrated bulletin gets back to fundamentals and answers such questions as: What is ion exchange? How and where is it used? Readily understood explanations of this unit operation and its growing domain are given.

Fundamental ion exchange processes are described with the aid of a full page of two-color drawings. Introductory section gives brief history of synthetic resin ion exchange development as well as explanatory material on regeneration and deionization.

The field is broken down, in the application section, into 13 process types: water conditioning for industry and home; removal of metal ion contaminants, recovery of metallic ions; recovery and purification of organic bases; deacidification of solutions; recovery of acidic constituents; adjustment of metal ion concentration; catalysis by acids and bases; fractionation of ionic constituents; conversion of salts by double decomposition; analysis, deionization; pharmaceutical and medical uses. Within each group, examples show how ion exchange is solving specific industry problems.

"Amberlite Ion Exchange" is issued by Resinous Products Division, Rohm & Haas Co., Dept. CP, Washington Square, Philadelphia 5, Pa. When inquiring specify CP 7347, pages 2 and 3.

Variety of conveyor equipment and accessories presented

Many types of conveyor equipment and accessories are described and illustrated in 18-page catalog. Among units presented are conveyors, belting, idlers, pan and reciprocating feeders, stackers, elevators, pulleys and buckets, chain flight conveyors, and accessories for all. Tables on belt conveyor capacities are also included.

Cat 100 is issued by Frank A. Kremser & Sons, Inc., Dept. CP, 3435 N. Fifth St., Philadelphia 40, Pa. When inquiring specify CP 7348 on handy form, pages 2 and 3.

Shows valves for LP gas service in 4-page brochure

Brochure contains construction details, basic specifications, and applications for liquefied petroleum gas valves. Globe, angle, check, spring-loaded check, and gate valves have UL approval and carry required 400# W.O.G. pressure rating and LPG-FU body markings.

Brochure "LP-Gas Valves" is issued by The Fairbanks Co., Dept. CP, 393 Lafayette St., New York 3, N. Y. When inquiring specify CP 7349 on handy form, pages 2 and 3.

You can get from Revere much more than Tubes and Plates



Because no one alloy can possibly meet all the various conditions of use, Revere makes condenser and heat exchanger tubes and plates in many different alloys. From its long experience Revere is able to give valuable collaboration on alloy selection.

Sometimes puzzling problems arise in operation. If tubes do not last as long as expected, consult Revere, no matter who made them. Sections of failed tubes will be helpful in determining causes.

In our experience, the main cause for shortened tube life is a change, or combination of changes, in operating conditions. The water supply may have been affected by a new source of up-stream pollution. Air entrainment is especially damaging and leaves unmistakable marks. Air can be drawn in through a leaky gasket. In one case, the source was traced back to a crack in the water pump casting. Occasionally we find that tube failure is due to increasing the water velocity beyond design limits in order to add to condenser capacity.

For a more comprehensive analysis of condenser tubes and what Revere can do for buyers and users of them, send for free booklet, "Life Extension for Condenser Tubes." See the nearest Revere Sales Office, or write direct.

REVERE

COPPER AND BRASS INCORPORATED

Founded by Paul Revere in 1801

230 Park Avenue, New York 17, N. Y.

Mills: Baltimore, Md.; Chicago and Clinton, Ill.; Detroit, Mich.; Los Angeles and Riverside, Calif.; New Bedford, Mass.; Rome, N. Y.—Sales Offices in Principal Cities, Distributors Everywhere.

SEE "MEET THE PRESS" ON NBC TELEVISION, SUNDAYS

When inquiring check CP 7350 on handy form, pgs. 2-3



EVALUATION of ACTIVATED CARBONS

Data Furnished by Darco Department
of ATLAS POWDER COMPANY*

Since adsorptive properties of activated carbon are often used in decolorizing, deodorizing, or purifying of liquids, the somewhat complicated mathematics of the process are, at best, a nuisance. According to Freundlich's equation:

$$\frac{x}{M} = KC^{1/n}$$

where:

x = amount solute adsorbed consistent units
M = amount of carbon used " " "
C = concentration of solute " " "
after adsorption
K, n are constants

*Usually grams for laboratory tests
To avoid the unwieldy calculations of this expression in estimating quantitative measurement of carbon performance, required quantity, and in checking uniformity of carbon from lot to lot, special graph paper

*"The Darcograph," a 24-page instruction booklet, "Darcograph Scale Rule," and special graph paper (portions reproduced here) are all copyrighted by Darco Dept., of Atlas Powder Company and are reproduced by permission of the copyright owner.

with a special scale and instruction book have been prepared. Complete graphic solutions are attained with a minimum effort.

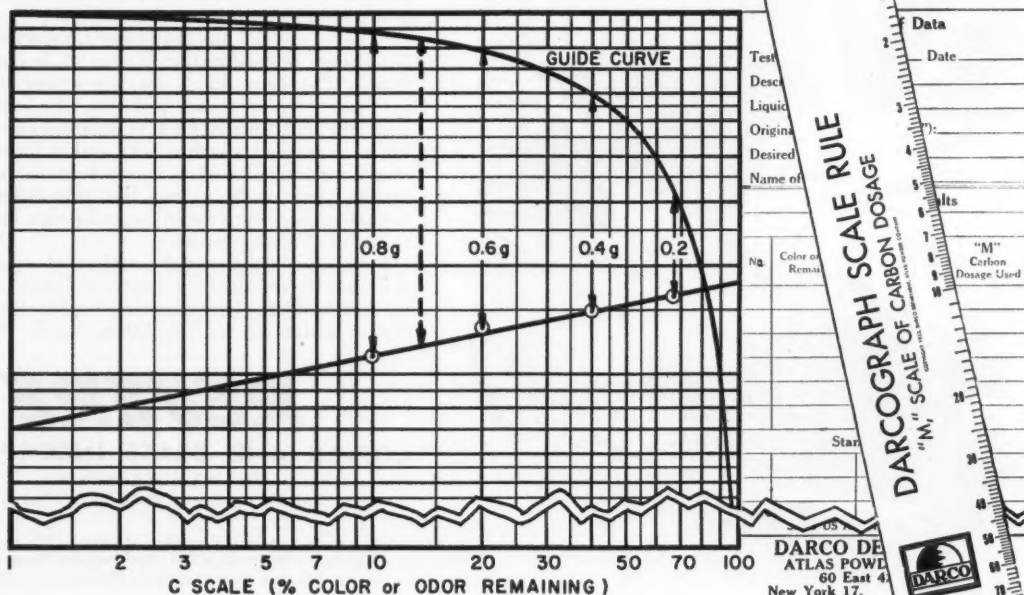
Typical Examples

Suppose that a molasses test solution is to be decolorized. Original color is 102.0 Green color units. This is to be reduced to 13.6 color units, or 13.3% of the original. Laboratory tests with a particular lot of activated carbon provide these results:

(Continued on page 192)

LABORATORY TEST RESULTS

Test No.	Color Remaining Green Color Units	% Original Color Remaining (C)	Carbon Dosage (grams) (M)
1	68.5	67.0	0.2
2	40.8	40.0	0.4
3	20.4	20.0	0.6
4	10.2	10.0	0.8



Typical Van-Cor
pipes and fittings
fabricated to speci-
fications by Van Dorn



Van-Cor

INDUSTRIAL PLASTICS—

✓Both Chemically Resistant and
Impact Resistant Types

✓Tensile Strength of Aluminum,
with one-half its weight

✓Readily Formed, Machined,
Drawn Molded or Welded

AVAILABLE FORMS

SHEETS . . . 1/2" through 1"
PIPE . . . 1/2" through 6" diameter (10 ft. lengths)
ROUND BARS 1/4" through 2" diameter (10 ft. lengths)
WELDING ROD 1/8" and 3/16" diameter

TYPICAL APPLICATIONS

Van Dorn fabricates its Van-Cor rigid non-plasticized polyvinyl chloride into such products as: Ducts, Hoods, Chemical Tanks, Tank Liners, Plating Racks, Fume Stacks and Piping.

WRITE FOR ILLUSTRATED BULLETIN
AND SPECIFICATIONS

INDUSTRIAL DIVISION OF
COLONIAL PLASTICS MFG. CO.

SUBSIDIARY OF
THE VAN DORN IRON WORKS CO.
2685 East 79th Street • Cleveland 4, Ohio

When inquiring check CP 7351 on handy form, pgs. 2-3

NEW LITERATURE

Electronics parts catalog shows equipment for labs, industry

Comprehensive catalog of 196 pages contains information on electronic items for industrial labs, hi-fi, television and radio. Sections are devoted to test equipment, intercommunication systems, and books.

Cat 56 is issued by Newark Electric Co., Dept. CP, 223 W. Madison St., Chicago 6, Ill. When inquiring specify CP 7352 on handy form, pages 2 and 3.

Pictures process equipment

Part of manufacturer's line of process equipment is described and illustrated in eight-page bulletin. Units covered include evaporators, vacuum pans, filters, sugar mills, heaters, calondrias and flakers. Text gives overview of manufacturer's facilities and other products and services.

Bul 510 is issued by Goslin-Birmingham Mfg. Co., Inc., Dept. CP, P.O. Box 631, Birmingham 1, Ala. When inquiring specify CP 7353 on handy form, pages 2 and 3.

Compares corrosion resistances of stainless tubular products

Designed as aid to engineers in selection of stainless tube and pipe for corrosion-resistant applications, bulletin presents data on six widely used stainless tubing steels vs. several hundred corrosive media at various temperatures and concentrations. Comparative corrosion ratings of the stainless tubular products are given in table form.

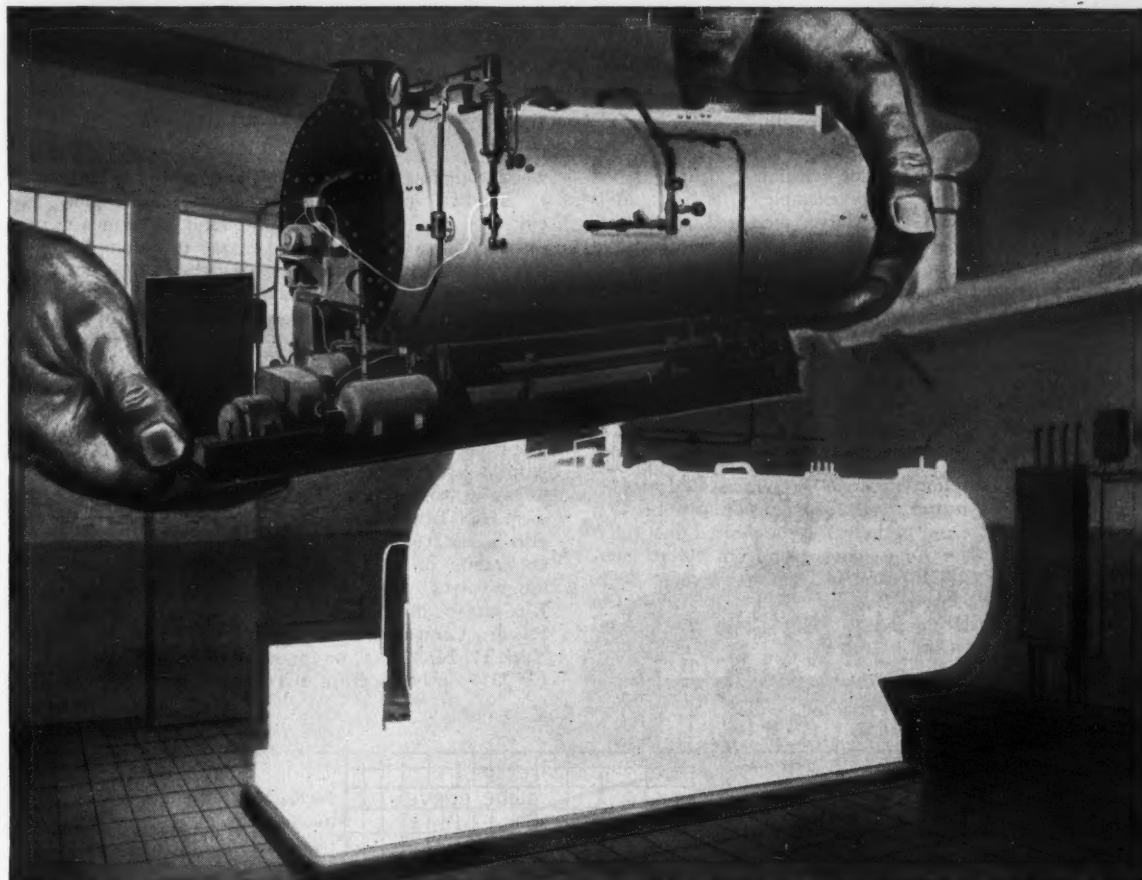
Data Card 160 is available from The Tubular Products Div. of Babcock & Wilcox Co., Dept. CP, 712 Eleventh St., Beaver Falls, Pa. When inquiring specify CP 7354 on handy form, pages 2 and 3.

Shows how recovery problems are solved by precipitators

Illustrated 40-page booklet gives information on equipment for recovering dusts, fly ash, fumes, mists, fogs or other similar suspensions in stack or process gases. Booklet summarizes latest advancements in precipitator equipment, outlines various types of electrode designs, shell constructions, electronic and mechanical rectifier. Also covered are combination mechanical-electrical recovery systems.

Bul "Cottrell Precipitators" is issued by Western Precipitation Corp., Dept. CP, 1016 West Ninth St., Los Angeles, Calif. When inquiring specify CP 7355 on handy form, pages 2 & 3.

Here's why you get more...when you buy a Cleaver-Brooks Self-Contained Boiler



...only Cleaver-Brooks can offer you the experience gained from more than 20 years of pioneering . . . and more than 12,000 individual "packaged" boiler installations

CLEAVER-BROOKS pioneering has been largely responsible for simplifying boiler buying . . . lowering costs of installation . . . delivering 80% guaranteed steam efficiency from every fuel dollar.

Boilers can be shipped as completely assembled and tested self-contained units, with auxiliaries as required. Installation involves minimum of time, construction and space. Usually connections only to steam, fuel, water lines and electrical service are needed. No special foundations are required. A short vent takes care of exhaust gases. Frequently, boilers are ready for use in a matter of hours, depending

on availability of service lines.

Cleaver-Brooks, originators of the self-contained boiler, offers wider experience that counts in another important way. Qualified engineers help you plan steam plants tailored *exactly* for your needs. Carefully analyzed are loads, space and equipment arrangement. This not only helps you solve present steam needs, but adds flexibility for future expansion as well.

This application engineering, plus basically sound design and construction is your assurance of a full return from your boiler investment. When you specify a self-contained boiler — make sure it's a Cleaver-Brooks.

Send for Catalog AD-100 for full details on Cleaver-Brooks boilers. Available for oil, gas and combination oil/gas firing. Sizes 15 to 500 hp, 15 to 250 psi — for heating and processing.



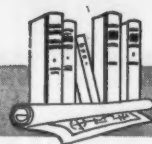
CLEAVER-BROOKS COMPANY
Dept. C-348 E. Keefe Ave.
Milwaukee 12, Wisconsin, U.S.A.

Cleaver-Brooks

ORIGINATORS OF
THE SELF-CONTAINED BOILER

Steam Boilers • Oil and Bitumin Tank
Car Heaters • Distillation Equipment
Oil and Gas Fired Conversion Burners

When inquiring check CP 7356 on handy form, pgs. 2-3



Evaluation of Activated Carbons

Plot percentage of color remaining against carbon dosage. For test 1, for example, C is 67%, M is 0.2 gm below Guide Curve, measured along scale rule. (Darcograph kit's scale rule is reproduced to scale at right of graph on page 190; it may be cut out or used by taking scale readings with dividers.) Point for test 2 is located at 40%, 0.4 (by scale) below Guide Curve. It is a property of the co-ordinate system employed that when all points have been plotted they will fall in a straight line called the "adsorption isotherm." If points do not lie in a straight line they are improperly plotted or data is incorrect.

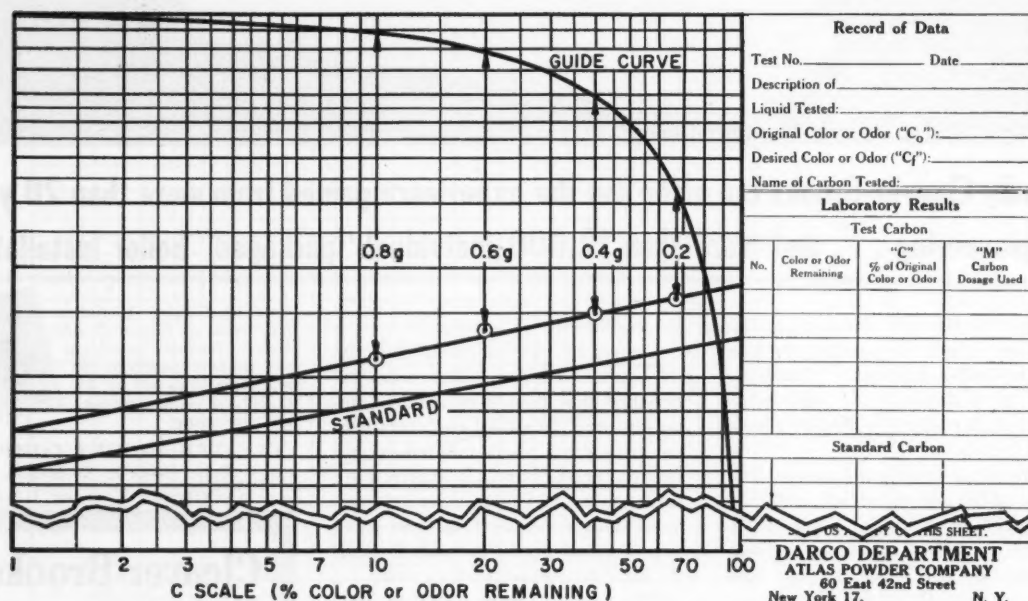
When adsorption isotherm has been established, it is a simple matter to read dosage (distance between Guide Curve and isotherm) at the desired final color. In fact, dosage for residual color from 1% to intersection of isotherm and Guide Curve (about 80%, in this case) may be read directly. For stated problem desired final color was 13.3%; dosage can be read as 0.74 gm (dashed rule).

Relative efficiencies of two carbons can be ascertained

when isotherms have been plotted for both. Adding a "Standard" carbon's isotherm to the earlier plot, efficiency can be found as the ratio of standard carbon dosage to test carbon dosage to accomplish the same decoloration. At the stated 13.3% color, for example, 0.98 gm of standard carbon was required or 0.74 gm of tested carbon. Efficiency of the carbon under test is:

$$\frac{0.98}{0.74} \times 100 = 132\%$$

Complete Darcograph kit contains ten sheets of graph paper, scale rule and instruction book. This 24-page book not only covers, in detail, the material presented here, but presents preferred color measurement and laboratory procedures. Darcograph may also be used to compute dosages for countercurrent application of activated carbon when single stage use involves excessively large treatment quantities. Kits may be obtained by writing Darco Dept., Atlas Powder Company, Dept. CP, 60 E. 42 St., New York 17, N. Y. . . . or for more information check CP 7357 on handy form, pages 2 and 3.



Chemical Processing, March 1954

Economical Bronze Design



Series I—Heavy duty bronze rotary gear pumps
Oilless bearings 2-23 G.P.M.—0-100 P.S.I.

Series II—Close coupled motor driven bronze pumps
Oilless bearings 2-4 G.P.M.—0-100 P.S.I.

Series F—High volume bronze rotary gear pumps
Oilless bearings 50-150 G.P.M. — 0-150 P.S.I.

Series IV—Rubber impeller bronze pumps
Oilless bearings 6-21 G.P.M.—0-30 P.S.I.

Series 55—Standard bronze rotary gear pumps
Grease fittings 2-23 G.P.M. — 0-100 P.S.I.

Series G—Standard bronze centrifugal pumps
Grease fittings 2-25 G.P.M. — 2-10 P.S.I.

OBERDORFER BRONZE PUMPS

Industrial Pump Div., Oberdorfer Foundries, Inc.
643 Thompson Rd., Syracuse, N. Y.

Address the 1954 edition of the Oberdorfer Industrial Pump catalog to:

NAME

COMPANY

ADDRESS

Do you want a factory representative to call ☐ Yes ☐ No

When inquiring check CP 7358 on handy form, pgs. 2-3

Reference guide shows methods for preserving metal

Bulletin is reference guide to chemicals and processes for metal preservation. It describes protective coating chemicals for paint-bonding on steel, zinc, and aluminum. It also covers rust proofing, drawing and cold forming. Chart categorizes each process by method of application, type of coating, coating time, and specific uses.

"Check List of Metal Preservation" is issued by American Chemical Paint Co., Dept CP, Ambler, Pa. When inquiring specify CP 7359 on handy form, pages 2 and 3.

Three bulletins add up to one better heating system

How to produce a better heating system is described in three 4-page bulletins. First bulletin shows the "how" of company's principle of outdoor-to-indoor heat control. Other two show its application to hot water and warm air systems.

Bul E-353, F-453, and H-653 are issued by Automatic Devices Co., Inc., Dept. CP, Western Springs, Ill. When inquiring specify CP 7360 on handy form, pages 2 and 3.

Information on iron-modified 90/10 cupro nickel alloy

Corrosion-resisting characteristics of iron-modified cupro nickel alloy are covered in 20-page bulletin, containing 50 tables, charts, and illustrations. Effect of sea water on alloy is summarized. Influence of different flows, fouling, galvanic behavior, welding, brazing, iron content, and heat treatment are discussed. Data are also given for polluted sea water and other corrosive media. Some physical and mechanical properties and heat transfer characteristics are included.

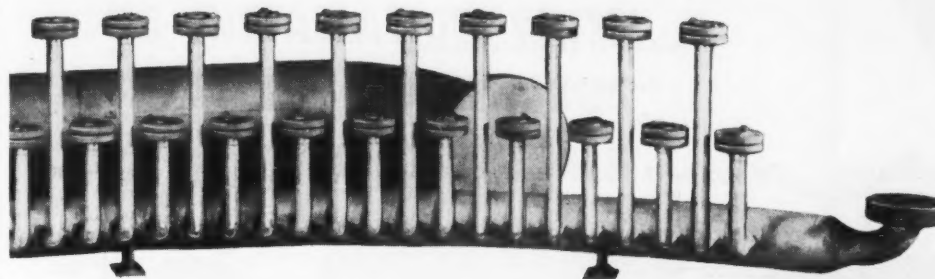
Bul A-170 is issued by International Nickel Co., Inc., Dept. CP, 68 Wall St., New York 5, N. Y. When inquiring specify CP 7361 on handy form, pages 2 and 3.

Stresses design and maintenance of oil-immersed starters

Line of oil-immersed motor starters with special emphasis on design and maintenance is described in 8-page bulletin. Ratings, dimension diagrams, cutaway drawings, and photos showing operational features are included.

Bul GEA-3541 is issued by General Electric Co., Dept. CP, 1 River Road, Schenectady, N. Y. When inquiring specify CP 7362 on handy form, pages 2 and 3.

It Takes GOOD TUBING To Make GOOD PIPING...



and **WELDCO**
Makes Only the Best!

The stainless steel piping, shown in the photo above, required the best tubing available. WELDCO was chosen for this important job because it met the rigid specifications of the buyer. It was selected, also, because of its excellent fabricating qualities . . . easy to bend, form, weld and assemble.

WELDCO is lightweight and corrosion-resistant . . . has a smooth inside finish,

exceptional strength, and complete uniformity throughout. It's available in Stainless Steel, Monel, Hastelloy, Inconel, Nickel, and Cupro-Nickel, in tube and pipe sizes from 3" to 30", Schedules 5 and 10, and 3" to 12", Schedule 40.

Whenever you need dependable tubing for special problems — or for regular applications — specify WELDCO, your best buy in top-quality tubing.

Whatever Your Needs In Tubing . . . You're 'Way Ahead With WELDCO

THE YOUNGSTOWN WELDING & ENGINEERING CO.
3721 OAKWOOD AVE. YOUNGSTOWN, OHIO

When inquiring check CP 7363 on handy form, pgs. 2-3

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pgs. 2-3

SSING MARCH, 1954



Properties of DIETHYLENE and TRIETHYLENE GLYCOLS

By GEORGE E. MAPSTONE

Edited by D. S. DAVIS

Professor of Chemical Engineering

Virginia Polytechnic Institute

Diethylene glycol (DEG) and triethylene glycol (TEG) are used in air conditioning and for dehydrating industrial gases. Properties of these materials are important in design for either of these applications. Nomograph presented here shows variations in vapor pressure, salt solubility, specific heat, and specific gravity with temperature.¹

Typical Examples

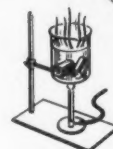
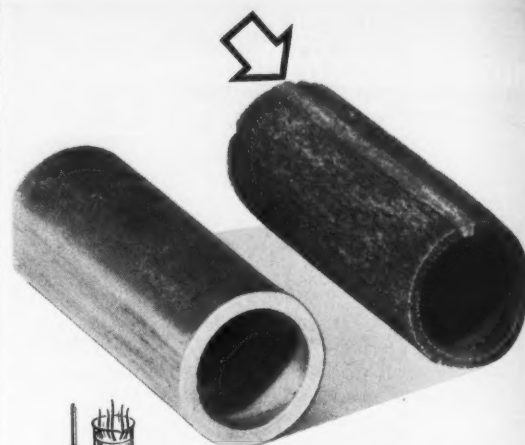
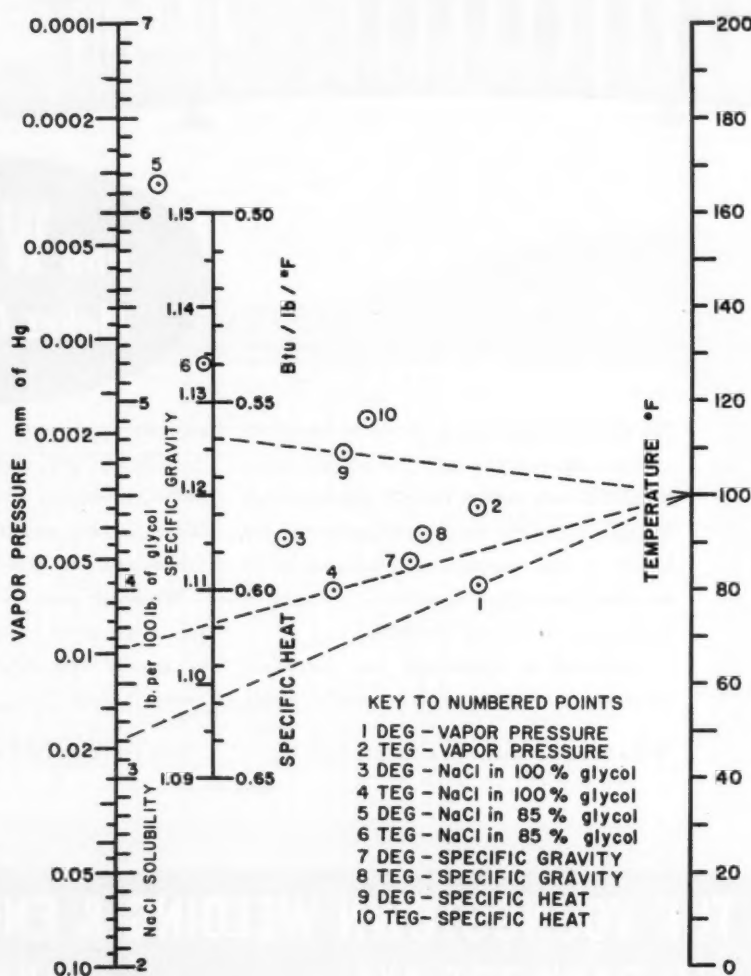
Vapor pressure of DEG at 100°F — connect 100°F and point 1, read 0.02 mm Hg.

Solubility of sodium chloride in 100% TEG at 100°F — connect 100°F and point 4, read 3.7 lb/100 lb TEG.

Specific heat of DEG at 100°F — connect 100°F and point 9, read 0.56 Btu/lb DEG/°F.

LITERATURE CITED

(1) CAMPBELL, J. M. and LAURENCE, L. I., "Dehydration of natural gas and hydrocarbon liquids," *Petroleum Refiner*, Vol 31, No. 11, pp 109-116, (1952).



Lab test shows

corrosion-resistance

of Welded Stainless Steel Tubing

That's a piece of ELECTRUNITE Stainless Steel Tubing on the left. On the right you see it after boiling in a 20 per cent hydrochloric acid solution. And this is what happened:

Wall thickness was reduced from .089 inches to .059 inches.

But the weld area was only reduced to .068 inches. In other words, the weld wasn't subject to preferential corrosion.

This accelerated laboratory test is one proof that the weld area of Republic ELECTRUNITE Stainless Steel Tubing and Pipe is as corrosion-resistant as the balance of the tube wall. More evidence is the fact that Republic has been supplying stainless steel tubing and pipe in all types of processing equipment for the past 25 years.

You can profit from these ELECTRUNITE advantages, whether you choose pressure tubes in carbon or stainless steel analyses. For complete data, write to:

REPUBLIC STEEL CORPORATION Steel and Tubes Division

207 East 131st Street, Cleveland 8, Ohio

GENERAL OFFICES • CLEVELAND 1, OHIO
Export Department: Chrysler Building, New York 17, New York



When inquiring check CP 7364 on handy form, pgs. 2-3

CHEMICAL PROCESSING

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MARCH,

Comprehensive treatment of thermocouples presented

Thermocouples, for all applicable temperature ranges are described in 36-page booklet. Separate sections are devoted to tubular iron-constantan couples, wire iron-constantan and copper-constantan couples, and chromel-alumel alloy and platinum couples. Dimensional drawings of complete assemblies and ten installation diagrams are included.

Bul 235-5 is issued by The Foxboro Co., Dept. CP, Foxboro, Mass. When inquiring specify CP 7365 on handy form, pages 2 and 3.

Basic engineering data on industrial rolls presented

First of series dealing with basic engineering data of industrial rolls, report is intended to assist in design and selection of rolls for specific plant applications. It lists the modulus of elasticity for seven different materials commonly used for rolls. Deflection equations and means of determining moment of inertia in roll-body cross sections of hollow and solid rolls are presented.

"Body Roll Deflections" is issued by Dept. IR, Rodney Hunt Machine Co., Dept. CP, 52 Main St., Orange, Mass. When inquiring specify CP 7366 on handy form, pages 2 and 3.

Describes factors affecting beer filter systems

Illustrated 20-page data book encompasses field of brewery filtration. Two articles, "Factors Governing Efficiency of Beer Filter Systems" and "Application of Filter-Aid Filters in Brewing Practice" are accompanied by four pages of frequently used brewing and related tables. Book is indexed in detail for convenient working reference.

"Brewery Filtration Data" is available from Process Filters, Inc., Dept. CP, 1807 Elmwood Ave., Buffalo 7, N. Y. When inquiring specify CP 7367 on handy form, pages 2 and 3.

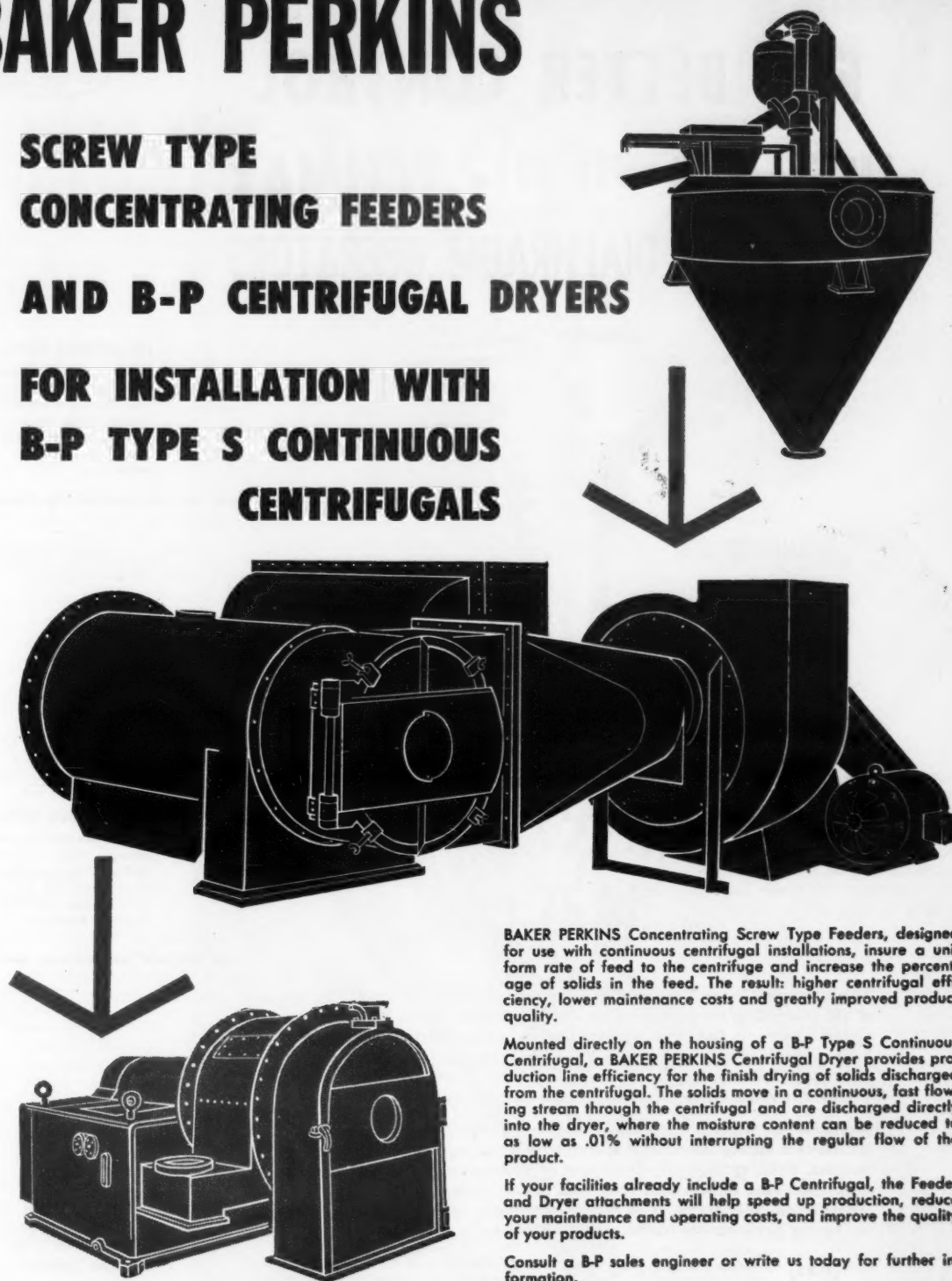
Leaflet on water sampling

Illustrated 4-page leaflet demonstrates some factors involved in obtaining useful samples required for proper control of water conditions in a power house. Which samples are important, when samples should be taken, where to obtain them, and how they should be drawn are explained.

Leaflet 28X7969 is available from Allis-Chalmers Mfg. Co., Dept. CP, 1151 S. 70th St., Milwaukee, Wis. Specify CP 7368 on pages 2 and 3.

BAKER PERKINS

SCREW TYPE CONCENTRATING FEEDERS AND B-P CENTRIFUGAL DRYERS FOR INSTALLATION WITH B-P TYPE S CONTINUOUS CENTRIFUGALS



BAKER PERKINS Concentrating Screw Type Feeders, designed for use with continuous centrifugal installations, insure a uniform rate of feed to the centrifuge and increase the percentage of solids in the feed. The result: higher centrifugal efficiency, lower maintenance costs and greatly improved product quality.

Mounted directly on the housing of a B-P Type S Continuous Centrifugal, a BAKER PERKINS Centrifugal Dryer provides production line efficiency for the finish drying of solids discharged from the centrifugal. The solids move in a continuous, fast flowing stream through the centrifugal and are discharged directly into the dryer, where the moisture content can be reduced to as low as .01% without interrupting the regular flow of the product.

If your facilities already include a B-P Centrifugal, the Feeder and Dryer attachments will help speed up production, reduce your maintenance and operating costs, and improve the quality of your products.

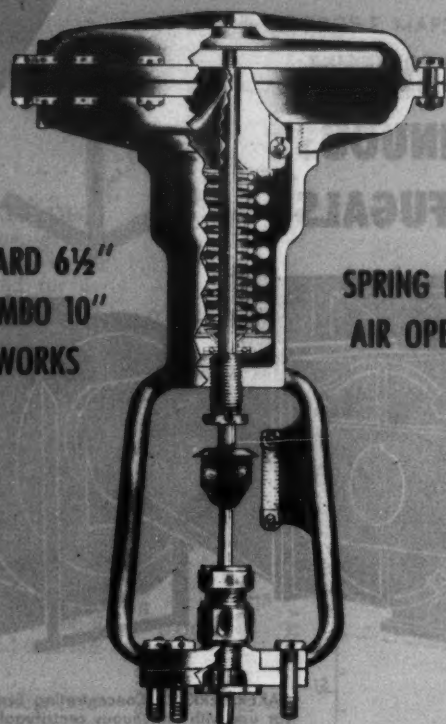
Consult a B-P sales engineer or write us today for further information.

BAKER PERKINS INC.

CHEMICAL MACHINERY DIVISION, SAGINAW, MICHIGAN

When inquiring check CP 7369 on handy form, pgs. 2-3

FOR BETTER CONTROL USE **BS&B** CLIMAX TYPE 86-TW DIAPHRAGM OPERATORS



STANDARD 6½"
OR JUMBO 10"
TOPWORKS

SPRING LOADED
AIR OPERATED

This versatile Climax Type 86-TW Diaphragm Operator is a modified version of the controlling mechanism of the famous BS&B Climax Type 86 Control Valve. It has been adapted for use with a variety of other valves, instruments and controls such as butterfly valves, diaphragm valves (Saunders Patent), engine throttles and other controls where controlling pressure is available for translation to reciprocating motion.

Available in either the Standard 6½" or Jumbo 10" size, this versatile topworks is spring loaded and operates from compressed air or other medium. Yoke, spring case, diaphragm case and plate are of high tensile cast iron. Stems are of stainless steel with bronze connector of unique construction. Diaphragm is of cotton or nylon neoprene. Roller bearings on the spring guide reduce friction loss to a minimum.

For more complete information on the Climax Type 86-TW Diaphragm Operator or on other Climax Controls, ask your BS&B Man or Sales Representative, or write to . . .

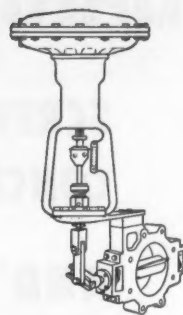


BLACK, SIVALLS & BRYSON, INC.

Climax Controls Division Dept. 4-M3

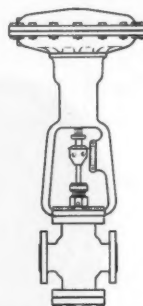
7500 East 12th St.

Kansas City 26, Missouri



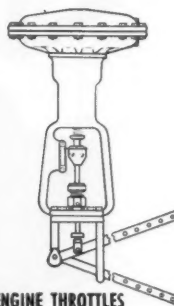
FOR BUTTERFLY VALVES

Climax Type 86-TW Diaphragm Operator is ideal for automatic control of butterfly valves. Mounts easily on any make of valve, and can be set for any specified operation of the valve.



FOR DIAPHRAGM VALVES

First developed for use on diaphragm valves, Climax Type 86-TW Diaphragm Operator has large diaphragm area and variable spring loading to insure minimum hysteresis.



FOR ENGINE THROTTLES and Other Controls

Wherever a sensitive yet positive reciprocal controlling motion is needed, such as on engine throttles, speed governors, cooling tower weirs, valve levers, etc., the versatility and adaptability of the Climax Type 86-TW Diaphragm Operator make it the ideal selection.

NEW LITERATURE

Processing equipment described, illustrated in 16-page book

Mixers, kneaders, centrifugals, barattes, wet churns, shredders, and mullers are illustrated and described in 16-page booklet. Four popular mixer blades are discussed. Chart showing capacities of mixers is included. Ten points to consider before purchasing a mixer are listed.

Bul CE-53 is issued by Chemical Machinery Division, Baker Perkins, Inc., Dept. CP, Saginaw, Michigan. When inquiring specify CP 7370 on handy form, pages 2 and 3.

Shows gamma cells in action

Illustrated 4-page bulletin pictures cells which produce a voltage when stimulated by gamma radiation. They can be used, as shown, in measuring density, liquid level, or other variables.

Supplement 104A is issued by The Ohmart Corp., Dept. CP, 2236 Bogen St., Cincinnati 14, Ohio. When inquiring specify CP 7371 on handy form, pages 2 and 3.

Versatility of plastics for packaging given

Wide range of properties of polyethylene, phenolic, styrene, and vinyl plastics and resins which makes them suited as containers for all kinds of products is described in 8-page booklet. Major properties, color and finish, and applications are outlined.

Bul G-21 is issued by Bakelite Co., a Div. of Union Carbide and Carbon Corp., Dept. CP, 300 Madison Ave., New York 17, N. Y. When inquiring specify CP 7372 on handy form, pages 2 and 3.

For more information on product at left, specify CP 7373 . . . see information request blank between pages 2 - 3.

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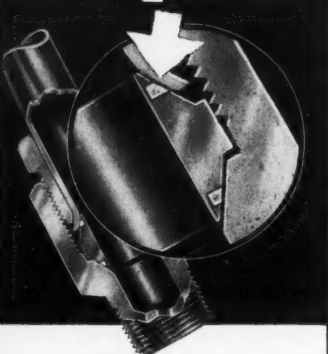
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Fitting Problem?



ONLY
Koncentrik
flared-tube fittings
(in Stainless or Monel)
give you the
PATENTED 2-WAY SEAL



1. Double-sealing, self-centering seat is Teflon-reinforced to give you DOUBLE protection against costly, dangerous leaks.
2. Heavy-duty, fatigue-proof... designed for high pressure use.
3. Easy to install.
4. Economical... parts interchangeable and reusable.
5. Complete line for tubing through 1" O. D.
6. Prompt shipment through leading Stainless distributors.

Our engineers will be glad to work closely with you in solving your special tube fitting problems.

THE SPECIAL SCREW PRODUCTS CO.

5445 Dunham Rd., Bedford, Ohio

Send for Proof

Literature covering Koncentrik fittings, and Powell valves with machined-in Koncentrik connections, now available. Write today.



When inquiring check CP 7374 on handy form, pgs. 2-3

NEW LITERATURE

Faster dissolving, dispersing told in 16-page catalog

Specifications of enlarged line of complete units for dissolving and dispersing operations are presented in illustrated 16-page catalog. All incorporate high-speed shear-producing impeller. Photographs and dimensional drawings of standard models are included. Table lists 30 typical materials being handled in the field, and compares times needed to dissolve or disperse by old method and by method using these units; latter method is as much as 32 times faster in one case, and 24 times faster in several cases.

"Cowles Ultra Fast Dissolvers" is issued by The Cowles Company Inc., Dept. CP, Cayuga, N. Y. When inquiring specify CP 7375, pgs. 2 and 3.

Gives specs on pallet stackers for "tight quarter" uses

Single page bulletin illustrates and describes manufacturer's 2000-lb capacity hydraulic pallet stacker designed for use in plants and warehouses.

With an elevating speed of 8 fpm and height of 115" for elevated forks, hydraulic unit is equally suitable as an auxiliary for larger operations. Right-angle tiering in aisles less than 6' wide is possible, manufacturer reports.

Bul 270X is issued by The Raymond Corp., Dept. CP, Greene, N. Y. When inquiring specify CP 7376 on handy form, pages 2 and 3.

Discusses design and uses of pressure-leaf filters

Illustrated 20-page brochure contains photographs, diagrams, and charts on design and operation of pressure-leaf filters. It includes diagrams of both vertical and horizontal filters. Sizes and capacities are listed.

Catalog NC-1-53 is issued by Niagara Filters Div., American Machine and Metals, Inc., Dept. CP, East Moline, Ill. When inquiring specify CP 7377 on handy form, pages 2 and 3.

Contains detailed info on primary elements

Containing much detailed engineering data, sixteen-page bulletin covers operation, construction, accuracy, and other facets of primary flow elements. It also deals with instruments and other phases of flow measurement problems.

Bul 500 is issued by Simplex Valve & Meter Co., Dept. CP, 68th and Upland St., Philadelphia 42, Pa. When inquiring specify CP 7378 on handy form, pages 2 and 3.

ROTOJET[®]

Tube Cleaners

Clean
tubes and pipes
from 1/2" to 12" I.D.
**THOROUGHLY
QUICKLY**



ROTOJET Model 512
Air-driven Motor, universal
joint, swing-frame head,
and solid brush.

Our large stock of Rotojet air-driven and water-driven tube cleaners, accessories, and repair parts for straight and curved tubes, pipes, and transfer lines is available to meet most requirements without delay. Tube cleaner specialization for 43 years assures satisfactory results from any Rotojet equipment we recommend. Send for Bulletins J-410 and R-105. For quick action wire or phone, HUmboldt 3-0570.



ROTOJET Junior
Model S32 Air-driven
Motor, universal joint,
cone cutter.

ROTOJET Model C-525
Air-driven Motor with
swing-frame head and
universal joint.

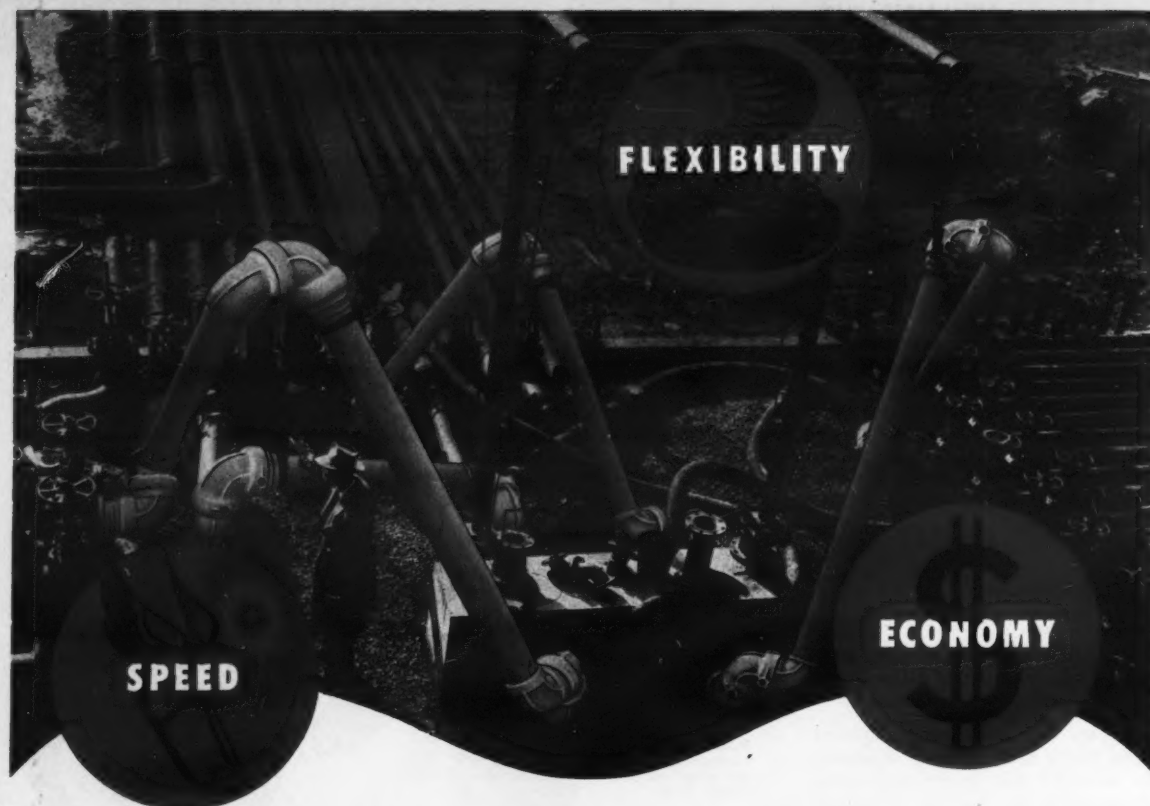
ROTOJET Junior Model C434
Air-driven Motor, flexible
coupling, expanding brush.

ROTOJET Model C-526
Air-driven Motor with
pivot head and
universal joint.

ELLIOTT COMPANY-ROTO DIVISION

141 Sussex Avenue, Newark 1, N. J.

When inquiring check CP 7379 on handy form, pgs. 2-3



CHIKSAN Swivel Joints Illustrated in this installation, facilitate the speedy, economical handling of various fluids through 16 lines from loading dock to manifold pit — a distance of 800 feet. Since each line leads to a separate tank through the manifold, cross contamination is eliminated.



CHIKSAN Swivel Joints in the pump manifold above enable operator to pull base stock from outside storage into the plant and direct flow to proper vessel or proportioner.

The Flow of Enterprise Relies on

CHIKSAN
Ball-Bearing Swivel Joints

CHIKSAN Manifolding Saves 3 Ways!

- ✓ ORIGINAL INSTALLATION
- ✓ NO CONTAMINATION LOSSES
- ✓ LOW COST OPERATION

Original cost of CHIKSAN flexible line manifolding installations often run as much as 50% less than fixed line manifolding operations which incorporate costly multiple valve and line systems.

A CHIKSAN manifolding operation is simplified in its entirety — providing complete flexibility, mobility and ease of operation in limited spaces.

CHIKSAN manifolding installations reduce line hook-up time — keep pit floor clear of lines thereby providing greater working areas.

CHIKSAN manifolding operations facilitate the transfer of all types of fluids safely and rapidly under extreme climatic conditions with no possibility of cross contamination.

CHIKSAN manifolding installations are specifically engineered for long life — easy and economical maintenance, and render years of trouble-free operation.

Our Engineering Research and Development Department will welcome inquiries on your manifolding problems.

Write for Catalog 53-C,
Dept. 3-CP



Representatives in Principal Cities

CHIKSAN COMPANY • OAKLAND, CALIFORNIA • CHICAGO 20, ILLINOIS • NEWARK 3, NEW JERSEY

CHIKSAN MANIFOLDING SYSTEMS • CHICAGO 20, ILLINOIS • CHICAGO 20, ILLINOIS • CHICAGO 20, ILLINOIS

When inquiring check CP 7380 on handy form, pgs. 2-3

ACTH

(Continued from page 7)

vanced as far as it should have. There was only a simple form of the material available. When given to a patient, his body wasted most of it in trying to restore a hormone balance. Doses had to be repeated every six hours. Yet Armour was in the drink; they could only choose to sink or swim. They swam.

Staggering as the job was of getting into production without pilot plant data, it was overshadowed by assay operations. With each of the almost daily process changes, a new set of assays had to be run to determine yield and efficacy of product. A small army of trained workers under Elmer King used \$3000 worth of white rats every week.

President Specht, however, kept his faith in ACTH and Armour's ability to deliver it. As fast as more efficient processes were developed, prices were cut. Starting at about \$210 per gram, the Armour price of ACTH plummeted to \$100 on May 1, 1950. Today's prices are not comparable because the drug has been greatly improved, but the drug cost for treatment to the patient is from one-fifth to one-tenth of the May, 1950 price depending on the nature of the illness.

For the monumental task he performed in setting up production methods, Mr. Fisher has been selected one of the "Outstanding young men of 1953" by the Chicago Junior Association of Commerce.

During this period, research also moved at a gallop. Dr. Koch had died in 1947 and Dr. E. E. Hays took over as head of Pharmaceutical Research. Though much work was done in determining structure (a question still not settled) indications are that ACTH will not be easily synthesized. But the "shortage" in supply reported earlier was quashed by development of a long acting form, *HP Acthar Gel*, in 1952. Since this form goes into the body fluids more slowly, it does not appear at an instantaneous high level and is not eliminated rapidly as ordinary ACTH is.

This difference in efficiency of use has meant stretching of supply to meet actual needs.

Present production process was essentially worked out in 1951 by Fisher and his associates. Since that time production facilities have been moved to the ultra-modern Armour Pharmaceutical Center near Kankakee, Illinois. Human blood gamma globulin, and serum albumin are also produced there as well as liver preparations, intrinsic factor, trypsin, insulin, pituitary preparations, adrenal extracts, and other drugs. Robert C. Johnson is in charge of operations at the Kankakee plant and Harold C. Johnson (no relation) is manager of all pharmaceutical plants.

Biologicals research at Armour continues. Though Armour is unlikely to turn up another drug of the stature of ACTH immediately, important products are steadily coming to light. "Biopar," for example, contains a recently announced factor which aids in assimilation of vitamin B₁₂. "Tryptar," a pancreatic enzyme, has opened new technics for treatments involving removal of dead tissue. And work progresses on dozens of others.

(Continued on next page)

Dr. A. H. Holland, Jr., Medical Director, and his assistant, Dr. Richard Carey, however, feel that ACTH is more than a new and limited therapeutic. The hormone contributes to medical research both as a tool and by raising questions presumably answered long ago — Just what is the nature of disease and the body's ability to cope with it? A whole new way of medical thinking is being born. The men who brought ACTH to production have done much more than putting a new and difficultly mastered product on the market.

**Shows how, where to use
mist eliminators**

Construction, principle of operation, and application of mesh type entrainment separators are covered in 4-page illustrated bulletin. Specific examples of installations show how these units are improving operations in stills, absorbers, evaporators, knock-out drums, scrubbers, vacuum crystallizers, and other processing equipment. Back page presents information helpful in determining size of separator required.

Bul 15 is issued by Otto H. York Co., Inc., Dept. CP, 360 Glenwood Ave., East Orange, N. J. When inquiring specify CP 7381 on handy form, pages 2 and 3.

**Dehydrating and dewatering
equipment described**

Dehydrating and dewatering equipment is illustrated and described in colorful 48-page catalog. Equipment consists of steam tube, direct fire, and hot air dryers; water tube coolers; continuous presses; and paddle screens. Cross-sections, detailed drawings, and tables supplement each section of the catalog. Pictured are a number of installations in operation.

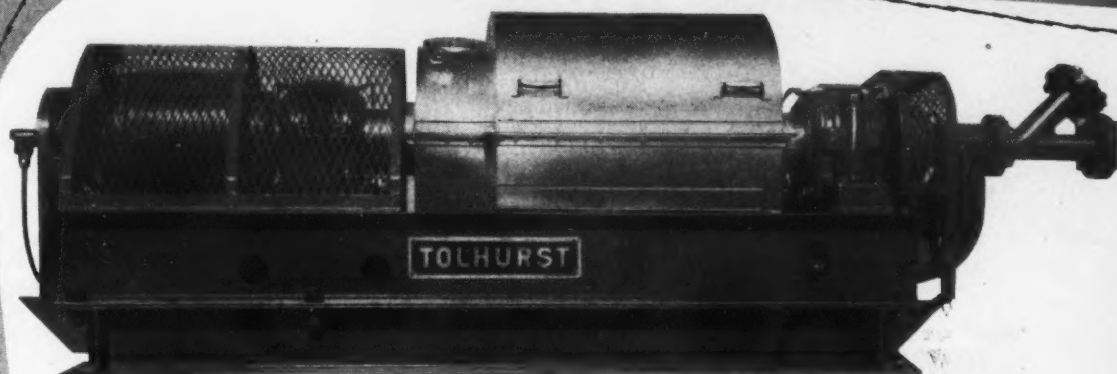
"Dehydrating Equipment" is issued on letterhead request to Davenport Machine and Foundry Company, Dept. CP, Davenport, Iowa.

**Fluid jet grinders discussed
in illustrated bulletin**

Fluid jet grinding machine, using compressible fluids, air or steam as the source of energy, is described in four-page illustrated bulletin. Various machine sizes are shown. Typical grinding data for various materials processed are given. Cross-sectional drawing shows design of unit. Machine is said to be especially applicable where micron-size particles are desired.

Bul 091 is issued by Sturtevant Mill Company, Dept. CP, Harrison Square, Boston 22, Mass. When inquiring specify CP 7382 on handy form, pages 2 and 3.

NEW "MAXI-FLEX" CONTINUOUS CENTRIFUGAL



Matches its operation to your specific requirements

If your plant runs continuously on a single product, process fluctuations or changes in technique need no longer pose a problem in the centrifuging step. The Tolhurst Maxi-Flex provides:

- ★ **VARI-BEACH DRIVE** which allows instantaneous change of beach speed from 0 to 300 inches per minute.
- ★ **VARI-POOL ORIFICE PLATES** which offer a choice of seven different pool depths.
- ★ **HIGH F x G** — a centrifugal force field which can be varied up to almost 2000 times gravity.
- ★ **SELF-CLEANING FEED CHAMBERS**

★ **FULL BALL AND ROLLER BEARINGS** which permit more compact inner bowl design. This design minimizes bowl deflection even when viscous materials are processed at high speeds.

These Maxi-Flex features now make it possible for you to enjoy the economies of continuous centrifuging even if your plant has short runs on different products.

FREE 90-DAY TEST IN YOUR PLANT — If you would like to investigate the application of a Maxi-Flex Continuous to your specific conditions, let's discuss a free 90-day test in your plant. No obligation, of course.

MAIL COUPON TODAY

TOLHURST CENTRIFUGALS DIVISION, Dept. CP-354
American Machine and Metals, Inc., East Moline, Illinois

- ☐ Send information about 90-day free test. We are processing
- ☐ Send new bulletin on Maxi-Flex Continuous Centrifugal.

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NAME AND TITLE

Tolhurst
CENTRIFUGALS
Division of American Machine and Metals, Inc.
EAST MOLINE, ILLINOIS

When inquiring check CP 7383 on handy form, pgs. 2-3

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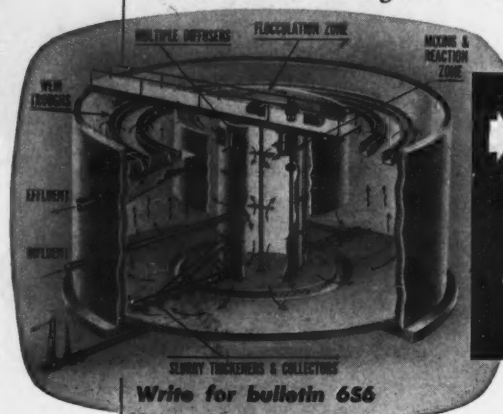
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Higher Filtration Rates...

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These advantages are due to Clariflow's control over short-circuiting, control of each function and control of sedimentation through low weir rates.



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- TURBIDITY AND COLOR REMOVAL
- INDUSTRIAL WASTE TREATMENT

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FACTORY • ENGINEERING OFFICES • LABORATORIES

PROQUIP PROCESS EQUIPMENT

AURORA, ILLINOIS

When inquiring check CP 7384 on handy form, pgs. 2-3

AIR • GAS • AMMONIA / compressor operators

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you can build peak performance into your oldest compressors! and obviously into your newer, high speed machines, too!

INSTALLATION OF VOSS VALVES WILL DO THE JOB!

If you want peak performance... increased efficiency... greater output... lower power costs with utmost safety, investigate the advantages of VOSS VALVES for your machines.

VOSS VALVES provide... Quiet, vibration-free operation • 20 to 60% more valve area • less power consumption • low pressure loss • normal discharge temperature • lower operating costs • utmost safety.

To increase the efficiency of your compressor, send us the name, bore, stroke and speed of your machine. Our detailed proposal will be sent without obligation.

VOSS VALVES

J. H. H. VOSS CO. INCORPORATED

784-B East 144th Street, New York 54, N. Y.

When inquiring check CP 7385 on handy form, pgs. 2-3

NEW LITERATURE

General Information on floors and their care

Floors and floor problems are discussed in 24-page brochure. Subjects include: types of floors, how they are built, what factors enter into their deterioration, and how floor troubles can be diagnosed and treated.

"Floors and Floor Problems" is issued by Tremco Mfg. Co., Dept. CP, 8701 Kinsman Rd., Cleveland, Ohio. When inquiring specify CP 7386 on handy form located between pages 2 and 3.

What the news is in line of fuses

Series of loose-leaf bulletins illustrate and describe different types of fuses and fuse box products. Subjects of bulletins include: fuse pullers, clamps for fuse clips, plug fuses, cartridge fuses, mechanical indicating fuses, fustats, renewable plug fuses and fuses for transformer protection.

Bulletins are issued by Economy Fuse & Mfg. Co., Dept. CP, Greenview Ave. at Diversey Pkwy., Chicago, Ill. When inquiring specify CP 7387 on handy form located between pages 2 and 3.

Plane grating spectrograph described in bulletin

Analytical tool for high dispersion analysis, low sample concentration, and study of line shapes, plane grating spectrograph is described in bulletin. Instrument has ultra-high dispersion and resolution while covering 2000A to 6500A at one setting. Three gratings and extra wide plateholders are available to provide wide wavelength coverage.

"Jaco Ebert 3.4 Meter Plane Grating Spectrograph" is issued by Jarrell-Ash Co., Dept. CP, 26 Farwell St., Newtonville, Mass. . . or for more information check CP 7388 on convenient Reader Service located between pages two and three.

For the DEPENDABILITY You Seek we recommend PUMPS "by Aurora"

Capacities to 4,000 G.P.M. Heads to 300 Ft.

PUMPS "by Aurora"

Type OD Horizontally Split Case, Double Suction, Single Stage Centrifugal Pump

WRITE for BULLETIN 105

The Type OD PUMPS — for general water supply for municipalities, industries, office buildings, institutions — also — for handling liquids, chemical solutions, oils, etc. in industry.

AFCD TURBINE TYPE PUMPS — ideal for "1001" duties where small capacities and high heads predominate. Get acquainted.

Write for CONDENSED CATALOG "A"

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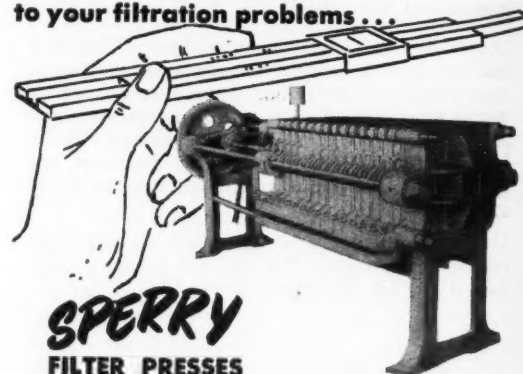
AURORA PUMP COMPANY

DIVISION OF THE NEW YORK AIR BRAKE COMPANY

62 LOUCKS STREET, AURORA, ILLINOIS

When inquiring check CP 7389 on handy form, pgs. 2-3

for the exacting answers to your filtration problems...



SPERRY FILTER PRESSES

When you consider the many advantages of Sperry Filter Presses, you can quickly understand why hundreds of manufacturers throughout the country depend on Sperry for solving industrial filtration problems of every kind.

Sperry Filter Presses offer greater economy — low first cost, minimum maintenance and long life... require less floor space... handle any kind of filterable mixture... and use practically any kind of filter material. For the complete story, ask for the big free Sperry catalog.

D. R. SPERRY & CO. BATAVIA, ILLINOIS
Filtration Engineers for More Than 60 Years

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Western Sales Representative: B. M. Pilshay, 833 Merchants Exchange San Francisco, 4, California DO 2-0375

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CHEMICAL PROCESSING

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For
Every
Purpose

APCO
TURBINE-
TYPE
PUMPS

ideal for
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NEW LITERATURE

Electrophoresis-diffusion apparatus described

Illustrated bulletin details unit-type electrophoresis-diffusion instrument. Suggested applications for apparatus are in analysis, study, and identification of electrically-active particles in biological and chemical research fields.

Form 8H853, is available from Specialized Instruments Corp., Dept. CP, 629 O'Neill Ave., Belmont, Calif. . . . or check CP 7391, pages 2 and 3.

Lab equipment pictured

Profusely illustrated booklet describes company's activities and products. Instruments and equipment used in control, development, and research laboratories are covered.

"Supplying the Nation's Laboratories" is available from Harshaw Scientific Div., Harshaw Chemical Co., Dept. CP, 1945 E. 97th St., Cleveland 6, Ohio. When inquiring specify CP 7392 on handy form, pages 2 and 3.

Describes multi-purpose laboratory centrifuge

Illustrated 4-page bulletin describes multi-purposed laboratory centrifuge. With four interchangeable bowls it performs liquid-liquid separation, solids concentration, liquid clarification, solvent extraction, and centrifugal mixing. Unit's capacity is from 1/5 to 2 gal per min. Weight is 150 lb and overall height is 30 inches.

Bul on Westfalia LWA-205 is issued by Centrico Inc., Dept. CP, 75 West Forest Ave., P.O. Box 349, Englewood, N. J. When inquiring specify CP 7393 on handy form, pages two and three.

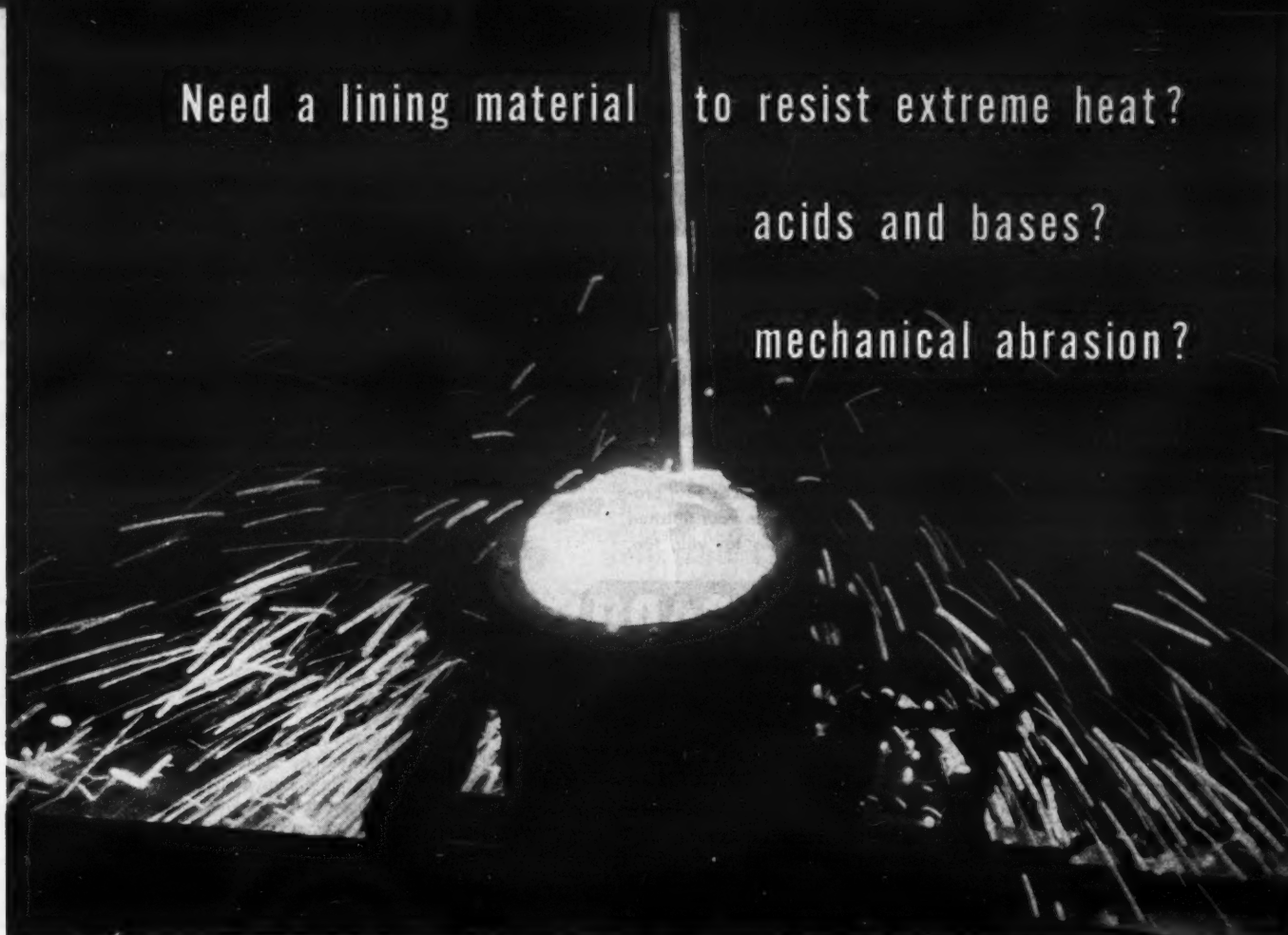
For more information on product at right, specify CP 7394 . . . see information request blank between pages 2 - 3.



Need a lining material to resist extreme heat?

acids and bases?

mechanical abrasion?



HERE'S A REFRACTORY THAT'S CAST— LIKE A METAL

It's pure cast alumina . . . very hard, very inert, very nearly impermeable.

And, we might add, very nearly indestructible. This molten stream is over 98% alumina. As it cools, it will form tightly interlocked alpha and beta alumina crystals. This makes a hard, ivory-like structure . . . with the inherent stability of pure alumina . . . in a dense, nearly impermeable body.

It takes a temperature of 3600 F to melt this refractory. The castings are so hard (hard enough to cut glass like a diamond) that they outwear metals. And so pure that the traces of impurities total less than 0.07%—a consideration if contamination is a factor.

This material has proved itself under the severest conditions. It has tremendous resistance to slags—*both basic and acid*. It's ideal for use in glass melting tanks, where there's extreme heat, corrosive fumes, and a molten bath that has a huge appetite for linings. It's used for wear-resistant applications in the steel industry. There are corrosion-resistant applications in process industries, etc.

WHY NOT CHECK UP? There must be scores of undiscovered uses for this comparative newcomer in the refractory field—and yours may be one. It bears investigating. Use the handy coupon below.

CARBORUNDUM

Registered Trade Mark

Dept. S-34, Refractories Division
The Carborundum Co., Perth Amboy, N. J.

- ☐ As a starter, send literature only.
☐ I'd like to see this cast alumina. Phone first, for convenient appointment.

NAME _____ POSITION _____

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FOR 50 YEARS
PURITY
• UNIFORMITY
SERVICE

Specify **EL DORADO**
coconut oil fatty acids
for batch-to-batch
UNIFORMITY

You can rely on quality . . . and batch-to-batch uniformity when you specify El Dorado coconut oil fatty acids or methyl esters. One big reason is because El Dorado has specialized in coconut oil products for a half century.

Economy? El Dorado's rigid quality control reduces your production costs and guarantees greater uniformity in your finished products. Saves a lot of processing headaches for you, too.

FATTY ACIDS:
Caprylic • Capric • Lauric • Myristic
Palmitic

METHYL ESTERS:
Caproate • Caprylate • Caprate • Laurate
Myristate • Palmitate

For samples and specifications,
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EL DORADO
OIL WORKS

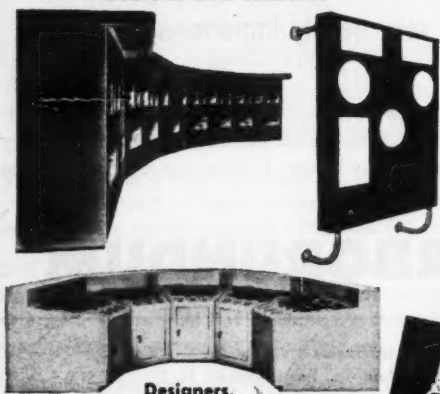
MAIN OFFICE: 311 California Street
San Francisco, Calif.

PLANTS: Bayonne, New Jersey
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When inquiring check CP 7395 on handy form, pgs. 2-3

Specify **FALSTROM**
-for **INSTRUMENT PANELS**

Custom Steel Controlboards,
Cubicles and Consoles —



Designers,
Engineers and Manufacturers
of Panelboards, Control
Centers and Special Assemblies

QUALITY METAL PRODUCTS SINCE 1870 —
STEEL, ALUMINUM, COPPER, BRASS,
STAINLESS STEEL AND OTHER ALLOYS

FALSTROM Panels are popular in chemical, refinery, and power plants nationwide. Standard designs, by FALSTROM, are the economical solution to all but the most unusual instrument mounting requirements. Where special problems indicate custom designing, FALSTROM engineers can design and build complete structures to meet your installation timetables. Call or write for information!

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FALSTROM
COMPANY

61 FALSTROM COURT
PASSAIC, NEW JERSEY

When inquiring check CP 7396 on handy form, pgs. 2-3

NEW LITERATURE

Bulletin describes welding hose

Two-page, full color welding hose bulletin describes types of welding hose produced by company. Cross section and cut-away photographs in actual colors of various types of hose are included, as well as constructions, performance data, recommended uses, sizes, working pressures, weights, and lengths.

Welding Hose Bulletin is issued by Quaker Rubber Corp., Div. of H. K. Porter Co., Inc., Dept. CP, Tacony and Comly St., Philadelphia 24, Pa. When inquiring specify CP 7397 on convenient Reader Service slip, pages 2 and 3.

Shows wide range of steam generators

Design drawings and photos are accompanied by brief summaries in catalog showing use of steam generators, and heat recovery and process equipment. Different arrangements of generators to meet specific problems are illustrated and allied equipment described.

Cat G.B.-153 is available from Union Iron Works, Dept. CP, Erie, Pa. When inquiring specify CP 7398 on convenient Reader Service slip, pages 2 and 3.

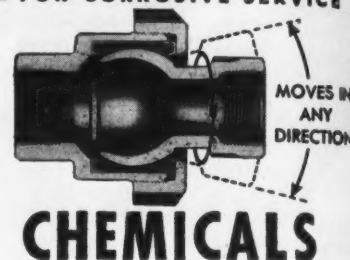
Covers many types of welded floats

Welded floats of stainless steel, Monel and chrome plated steel, in spherical, cylindrical and elliptical shapes are featured in eight-page bulletin. Float sizes range from two to 14" diameters and they are for pressures from vacuum to 4800 psi. Weights, buoyancies, collapsing pressures and other information are included.

Bul 753 is issued by W. H. Nicholson & Co., Dept. CP, 12 Oregon St., Wilkes-Barre, Pa. When inquiring specify CP 7399 on handy Reader Service slip located between pages two and three.

BARCO *Flexible*
BALL JOINTS
FOR CORROSIVE SERVICE

—when
you need
movable
joints in
piping
handling



MOVES IN ANY DIRECTION

CHEMICALS

- Provides for movement in piping—up to 40° side flexibility, plus 360° rotating movement.
- Stainless steel and chemically inert gaskets for strong chemicals. No metal-to-metal contact. Choice of body materials.
- One Barco Ball Joint does the work of two or more ordinary swivel joints because "it moves in any direction!"
- Many models available. For pressures to 7,500 psi; temperatures to 1000°F, 15 different sizes, 1/4" to 12". Ask for recommendations. BARCO MFG. CO., 537D Hough St., Barrington, Illinois.



Send for
New Bulletin
No. 215

THE ONLY TRULY COMPLETE LINE OF FLEXIBLE
BALL, SWIVEL, SWING AND REVOLVING JOINTS

When inquiring check CP 7400 on handy form, pgs. 2-3

* Handle a variety of tough corrosives
without danger of rust or contamination.

Buna N Pumps, Valves
and Fittings



VANTON'S new Buna N line resists most inorganic acids, alkalis, salts and fumes, as well as many organic chemicals . . . at temperatures up to 225°F.

Centrifugal pumps with open or closed impellers ranging in capacity from 20-130 gpm, head to 100 feet, suction 2" and discharge 1 1/2".

Globe, angle and Y valves with metal reinforced stems and discs, and readily renewable seating surfaces of soft rubber. Float valves, foot valves, strainers and check valves. Sizes range to 4".

Pipe & fittings — plain or threaded. Tees, elbows, couplings, crosses, bushings, flanges, unions, cocks, plugs, and caps. Full flow capacity and high strength. Working pressures of 50 psi.

Bulletin HR-2 tells the full story. Write today for free copy.

VANTON corrosion resistant products for fluid handling include flex-i-liner plastic pumps, polyethylene valves and PVC pipe and fittings. Bulletins on request.



VANTON
PUMP & EQUIPMENT CORP.
EMPIRE STATE BUILDING • NEW YORK 1, N.Y.

When inquiring check CP 7401 on handy form, pgs. 2-3

CHEMICAL PROCESSING

Disc and plate method of defibering explained

Applications, capacity, power and drive system, and operational features of vertical disc refiner are described in 6-page bulletin. Unit can be used for mixing, defibering, decorticating, pulping, shredding, and refining. For mixing, decorticating, etc., pulper has capacity of 50 tons per day. For defibering, unit handles 4 to 6 tons of raw-wood chip per day. For steamed chips capacity is 8 to 10 tons of softwood; 10 to 20 tons of hard wood chips. Entire machine takes 6 x 7' area, weighs approximately 4600 lb less motor.

Bul J-C 015 Roto-Pulper is issued by Jackson & Church Co., Dept. CP, Saginaw, Mich. Check CP 7402 on handy form, pages 2 and 3.

Mass spectrometer operation and use explained

Twelve-page, two-color bulletin shows theory, operation, and application of mass spectrometer in chemical work. Photographs and diagrams explain component parts and procedures. Range, resolution, and system specifications are given. Sample recorder strip charts show spectra of various chemical mixtures.

Bul GEC-587A is issued by General Electric Co., Dept. CP, One River Rd., Schenectady 5, N. Y. When inquiring specify CP 7403, pgs. 2 and 3.

Shows how to log 200 temps in a few minutes

Illustrated folder shows console indicator which saves panel space and helps operator speed logging of thermocouple temperatures. Features of design are pointed out which permit 200 temperatures to be logged in a few minutes when heat-balance checks need be made.

Folder ND46-33A (2) is issued by Leeds & Northrup Co., Dept. CP, 4934 Stenton Ave., Philadelphia 44, Pa. When inquiring specify CP 7404 on handy form, pages 2 and 3.

Chemical feed pumps explained, shown

Photographs and diagrams are included along with specifications of chemical feed pump in four-page bulletin with supplements. Explanation shows how pump can handle diatomaceous earth as well as common solutions required for water treating.

Bul PM 20 is issued by Precision Machine Co., Dept. CP, 8 Walnut Street, Somerville 43, Mass. When inquiring specify CP 7405 on handy form, pages 2 and 3.

Engineers—here's how a Speedline system will cut your piping costs!

on pressure problems

If You Use Schedule 40 Pipe at 150 psi Operating Pressure



Schedule 40:
100 to 1 Safety Factor

Lighter Wall will Meet Pressure Safety Requirements



Schedule 10:
83 to 1 Safety Factor

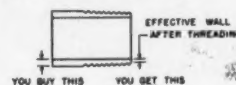


Schedule 5:
50 to 1 Safety Factor

BUY ALL THE WALL YOU NEED... DON'T BUY MORE

on flow problems

If You Use Screwed Fittings



You Lose One Half The Wall You Bought—AT THE THREADS

Lighter Wall Plus Speedline Fittings Give You:

GREATER INSIDE AREA—MORE FLOW
LOWER PRESSURE DROP



SCHEDULE 40



SCHEDULE 10



SCHEDULE 5

You get greater flow and capacity in light-wall pipe. For example, Schedule 5 has 15% to 25% more capacity than Schedule 40.

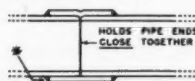
on corrosion problems

CORRECT ANALYSIS will combat CORROSION regardless of Wall Thickness

Type Corrosion	More Wall?
Contamination	No advantage
Discoloration	No advantage
Intergranular	No advantage
Galvanic	No advantage
Atmospheric	May be advantage
Pitting	Little advantage
Inches Penetration Year	May be advantage

CHANGED ANALYSIS and LESS WALL can be GREATER COST ADVANTAGE than CHANGED ANALYSIS and SAME WALL.

Speedline FITTINGS DESIGNED FOR SCHEDULES 5 AND 10 GIVE YOU:

lower installation costs for labor**SPEEDLINE ALIGNING CONNECTORS****Speed Installation**

*Can be Welded, Fused, Soldered or Brazed
Provide Easy Change-over from Schedule 40 to 5 or 10

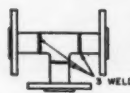
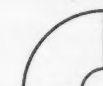
for materials

SCHED. 5	_____
SCHED. 10	_____
SCHED. 40	_____

You pay much less for light wall pipe. Here's a cost comparison of the three schedules in 1" size.

exclusive tangential feature

Speedline

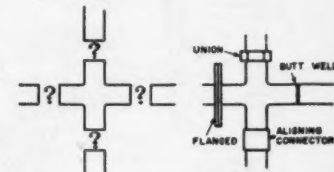


CONVENTIONAL

Provides Easier Aligning (with or without aligning connectors), more clearance for Welding or Flanging on ALL Speedline Formed Fittings. See gray panel below.

greater flexibility

Type of Joint can be selected "on the job."



FEWER DESIGN HOURS
FEWER INVENTORY ITEMS
SPEEDLINE "Multiple Choice" Fittings eliminate conventional flanged fittings, provide time and cost advantages of simple layouts versus elaborate and costly designs.

Speedline distributors are located in principal cities from coast to coast



Write for a copy of "Speedline Fittings"...without obligation.

Speedline

Corrosion-Resistant FITTINGS—the newest thing in pipeline economy

Manufactured by HORACE T. POTTS CO. • 502 E. Erie Avenue • Philadelphia 34, Penna.

When inquiring check CP 7406 on handy form, pgs. 2-3

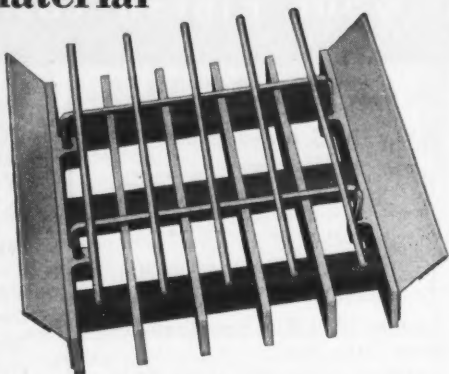
Grabs tramp iron from incoming material

You lay a Bauer Magnetic Grate on a frame in a hopper throat or floor opening. When flowable bulk materials go through the grate, all pieces of iron or steel are held in a firm magnetic grip.

The average sizes of Bauer Magnetic Grates range from 6 x 6 inches to 3 x 4 feet. They can be made in virtually all rectangular shapes and sizes wanted.

One of the grates can readily pay for itself by removing a bolt, nut, or spike from grain, nuts, seeds, fruits, coffee, tea, sand, clay, lime, or other material. Such a metal object could readily start a fire or damage a machine.

The Magnetic Grate is fully ex-

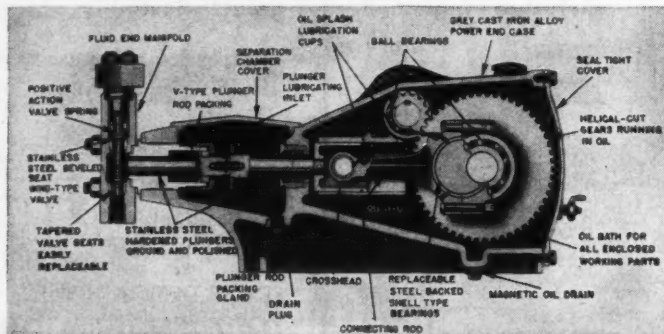


plained in our Bulletin No. M-3A which also describes Bauer chute and table permanent magnetic separators. You'll want the information. So, ask for the bulletin now while you're thinking of it.

THE BAUER BROS. CO.

1728 Sheridan Avenue, Springfield, Ohio

When inquiring check CP 7407 on handy form, pgs. 2-3



Working with Acids? High Pressure?

John Bean Reciprocating Pumps are built for these jobs with stainless steel sectionalized fluid ends for straight-line flow . . . with heavy duty drive ends having Tocco hardened gear teeth and bearing surfaces for continuous operation . . . with positive roto-splash lubrication within an enclosed case for dependable sealed-in performance.

Every day these John Bean design features help solve high pressure pumping problems for leading producers of chemical products. They'll solve your problems, too! Study the above diagram. You'll be convinced.

• Capacities from 1.0 to 50 GPM

• Operating pressures from 100 to 5,000 P.S.I.

John BEAN

JOHN BEAN DIVISION

FOOD MACHINERY AND CHEMICAL CORPORATION

Lansing 4, Michigan

Please send me your catalog on John Bean High Pressure Reciprocating Pumps.

Name _____

Firm _____

Principal Product _____

Street _____

City _____

Zone _____ State _____

When inquiring check CP 7408 on handy form, pgs. 2-3

NEW LITERATURE

Shows how buttons, resistors are made on toggle press

Semi-automatic compression molding press of 150 ton capacity is described in four-page bulletin. Toggle press is especially suited for molding parts like resistors, capacitors, and others requiring delicate insert work, parts with thick and thin sections, or parts with pins and projections.

Bul 516 is issued by F. J. Stokes Machine Co., Dept. CP, 5500 Tabor Rd., Philadelphia 20, Pa. When inquiring specify CP 7409 on handy form, pages 2 and 3.

Less rejects, better production reported with weigh-feeding

Advantages of weigh-feeding are cited in illustrated bulletin. In injection molding, weigh-feeding is said to cut rejects to less than ten per cent of the number resulting with volume feeding. Photographs show various products which have been molded using weigh-feeding units. Also illustrated are units in actual use within various plants.

"Weigh-feed with Glengarry's Injecto-weigh" is issued by Glengarry Equipment Corporation, Dept. CP, Bayshore, N. Y. When inquiring specify CP 7410 on handy form, pages 2 and 3.

Reports on sand, frothy pulp centrifugal pumping units

Several vertical-centrifugal units for pumping sands, frothy pulps, coarse concentrates, and tailing are described in 8-page bulletin. Charts, tables, and photographs supplement text which deals with construction and operating features, installation instructions, and parts.

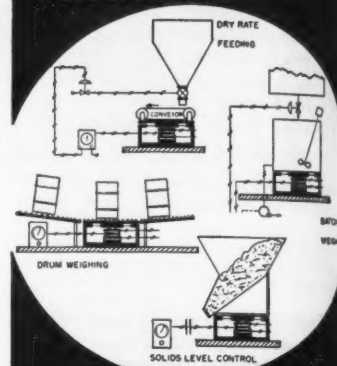
Bul P10-B5 is available from Denver Equipment Co., Dept. CP, 1400 Seventeenth St., Denver 17, Colo. When inquiring specify CP 7411 on handy form, pages 2 and 3.

Pipette rotor, microblenders and other lab supplies described

Illustrated 8-page catalog lists manufacturer's line of scientific apparatus for laboratory use. Among items listed are: pipette rotor for blood cell counts; stainless steel and polyethylene laboratory ware; throw-away fuel tanks for soldering, glass bending and melting crucibles; and water conditioners, detergents and other reagents.

Bul "Laboratory Specials" is issued by Aloe Scientific, Div. of A.S. Aloe Co., Dept. CP, 5655 Kingsbury Ave., St. Louis 12, Mo. When inquiring specify CP 7412 on handy form, pages 2 & 3.

a NEW tool for process control



W/C Weighing Scale

PNEUMATIC-PLATFORM TYPE

- For batch or continuous weighing of solids or liquids
- For remote indication or continuous flow control
- With accuracy above 0.25% of range
- Highly sensitive, extremely rugged
- No springs, knife edges, or levers
- Unaffected by off-center loading on platform
- Unaffected by vibration

Here's the latest step toward continuous process control of your plant—especially in explosive or dull atmospheres. It's the new W/C Weighing Scale. Fully tested, proved, and guaranteed to cut processing time or improve your yield.

Based on the force-balance principle, the W/C Weighing Scale translates weight into a pneumatic output signal. It is furnished complete with a remote panel containing a weight-indicating scale 45 inches long.

Available in ranges up to 500 pounds, it is the first device that reliably uses weight as a criterion of measurement to meet the demands of modern process control.

WRITE FOR Catalog which gives complete details, engineering drawings, and calibration curves.

WEIGHING COMPONENTS,
64 Fulmer Ave. • Hathorn, N.J.

When inquiring check CP 7413 on handy form, pgs. 2-3

CHEMICAL PROCESSING

Deals with pressure vessel and piping problems

Designed to be of help to engineers and designers, publication presents authoritative data on pressure vessels and piping. Bulk of material presented is in the form of tables which cover stress values for a number of different steels, as well as non-ferrous metals. Also tabulated is American Standard Code for pressure piping. Reviews of recent literature in the field are included.

Taylor Forge, Vol 1, No. 1, is issued on letterhead request to Taylor Forge and Pipe Works, Dept. CP, P.O. Box 485, Chicago 90, Ill.

Offer reference manual on insulation protection

Revised reference manual describes in detail 36 of manufacturer's coating and adhesive products for use in the installation and surface protection of industrial insulations. Technical data, recommended uses, citation of appropriate specifications, and other important facts are given.

Reference Manual is available on letterhead request to Benjamin Foster Co., Dept. CP, 4639 W. Girard Ave., Philadelphia 31, Pa. When inquiring specify CP 7414, pages 2 and 3.

Tells how oxygen recorder analyzes samples

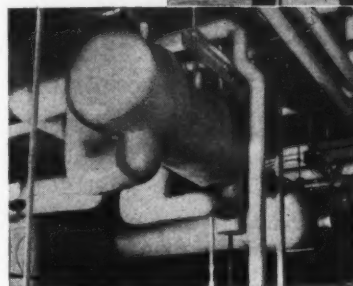
Printed in two colors, 8-page folder pictures and describes oxygen recorder based on paramagnetic properties of oxygen. Analyzer proper, recorder, and other component parts are detailed. Numerous applications are covered in brief.

Folder ND46-91(3) is issued by Leeds & Northrup Co., Dept. CP, 4907 Stenton Ave., Philadelphia 44, Pa. When inquiring specify CP 7415 on handy form, pages 2 and 3.

Tells of automatic sprinkling without piping

Illustrated 2-page bulletin gives details on automatic sprinkler-type fire extinguishers. Units are stored-pressure, vaporizing liquid fire extinguishers with one-gallon capacity. Approved by UL, they are pressurized at 80 psi with carbon dioxide and charged with chlorobromomethane as the extinguishant. Installation entails nothing more than suspending extinguisher from hook in ceiling. Bulletin presents details on both operation and construction.

Bul SP-753 is available from Stop-Fire, Inc., Dept. CP, 125 Ashland Place, Brooklyn 1, N. Y. When inquiring specify CP 7416 on handy form, pages 2 and 3.



Upjohn's Freeze-Dry Process uses *Acme* units to reach -100° temperatures

The men at Upjohn coined a new term for Acme's Dry-Ex Chiller when they explained how it was used in their freeze-dry process of manufacturing multiple vitamin products and blood plasma. They call the Dry-Ex a "de-super heater" because it is helping them reach temperatures of a minus 100 degrees.

The function of the Dry-Ex in this amazing process is to use Freon-22 to cool Freon-13. This super-cooled refrigerant is then passed through an Acme Heat Exchanger and into a vacuum

unit where liquids are being changed to powders through a sublimation process. Vials of liquids frozen into solid blocks are placed in a near vacuum and subjected to minus 100 degree temperatures. The result is evaporation without moisture (sublimation) as the frozen solids change to powder form. Proof that Upjohn is satisfied with the performance of the Acme units in the system is obvious when you count the number of freeze-dry units in their giant Portage Road plant. There are 15 of them all using an Acme Dry-Ex and an Acme Heat Exchanger.



ACME INDUSTRIES, INC.

Mfgs. of a complete line of Air Conditioning and Refrigeration Equipment

JACKSON, MICHIGAN



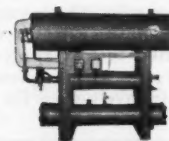
Evaporative Condensers
Cooling Towers
Floor-type Unit Coolers



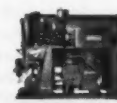
Direct Expansion
(Dry-Ex) and Flooded
Liquid Chillers
Heat Exchangers,
Oil Separators



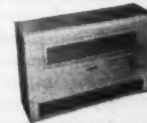
Shell and Tube, Shell
and Coil Condensers
Receivers, Pipe Coils



Packaged Liquid
Chillers to 225 tons



Flow-Temp Heat
Pumps
Flow-Cold Liquid
Chillers



Remote Room
Conditioner

Continuously serving the air conditioning and refrigeration industry since 1919

When inquiring check CP 7417 on handy form, pgs. 2-3

MIX IT *better* ... MIX IT *faster* ... the **TUMBLING ACTION** mixer for intimate blending of dry ingredients

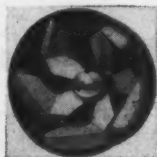
A Munson Rotary Batch Mixer provides faster, more intimate blending of dry ingredients—yet will not stratify ingredients or alter characteristics of basic components. Its famous 7-way mixing action, plus low operating costs easily makes the Munson first choice for performance and economy.



UNEQUALLED FOR DRY MIXING OF:

Chemicals, Fertilizers,
Feeds, Cereals,
Gelatin, Glue,
Soap Compounds, etc.

EXCLUSIVE MULTIPLE- BLENDING ACTION!



Lifters continuously cut out and lift ingredients as drum slowly revolves. Rotating cone tumbles stock to center. Conveyor flights on mixer shaft also agitate stock back to center—where mixing cycle repeats. Empties completely after every mix.

Munson Rotary Batch Mixers can be fitted with internal spray for introduction of limited amount of liquid. Mixers range in capacities from 40 to 200 cu. ft.—for working floor, overhead or basement installation.

Skilled Munson engineers will be glad to help you solve your mixing problem. Write us today...

Other famous MUNSON products:
Rotary Knife Cutters, Hammer Mills,
Attrition Mills, Rotary Crushers...

MUNSON MILL MACHINERY CO. Dept. P-354 Utica, New York

When inquiring check CP 7418 on handy form, pgs. 2-3

**HOW LONG WILL
A PROTECTIVE
COATING LAST?
HOW MUCH WILL
IT COST PER YEAR
OF SERVICE?**

*Correct
Answers May
Save You
Thousands
of Dollars*



Experience has shown that selection of proper protective coatings will save you 50% of your yearly painting costs.

You can eliminate the uncertainty in choosing the right coating—that coating which gives the most protection and the longest wear for the least money.

Learn from actual impartial field tests. This is the first time any manufacturer has made available the results of tests conducted by an independent testing laboratory. See how various coating systems compare in estimated service life, cost of application and most important—with structural steel—maintenance cost per sq. ft. per gallon. This information can save money for you. Send for it without delay.

CARBOLINE

CARBOLINE COMPANY

A Division of Mullins Non-Ferrous Castings Corp.
331 Thornton Avenue St. Louis 19, Mo.

Specialists in Corrosion Resisting Synthetic Materials

When inquiring check CP 7419 on handy form, pgs. 2-3

NEW LITERATURE

Saves drafting time in plant layout

Conventional plant layout procedures entailing many hours of drafting can be replaced with system involving use of photocopy, according to manufacturer. Prints of the master layout can be made without loss of detail. Moveable templates make rearrangement of floor plans easier. Details of system are outlined in 4-page bulletin.

Bul "Peerless Plant Layout System" is available from Peerless Photo Products, Inc., Dept. CP, Shoreham, L. I., New York. When inquiring specify CP 7420 on pages 2 and 3.

Unit features simple, air induced flotation

Feature of flotation unit described in 8-page bulletin is simplicity of air induction assembly and recirculation distribution of air-charged clarified water. There are said to be no air relief valves or complicated control valves in the system.

Bulletin discusses and illustrates company's flotation units in some detail, going also into a brief explanation of flotation and where it is applicable.

Bul on Flotation Units is issued by F. S. Gibbs, Inc., Dept. CP, 2300 Washington St., Newton Lower Falls 62, Mass. When inquiring specify CP 7421 on handy form, pages 2 and 3.

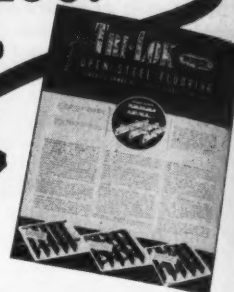
Displays line of stock chain sprockets

Hp ratings, bushing and sprocket specs for 1/2, 3/8, 3/4, 1, and 1 1/4" pitch chain are listed in 16-page catalog. Installation and removal procedures for sprockets are listed as well as hp selection charts, drive selection procedures, and service factor tables.

Cat B55-53 is issued by Morse Chain Co., Dept. CP, 7601 Central Ave., Detroit 10, Mich. When inquiring specify CP 7422 on pages 2 and 3.

FREE CATALOG!

available to you who
are interested in
the facts on
open steel
flooring.



Up to the minute information on the hows and whys of construction and installation of Tri-Lok Open Steel Flooring may now be at your finger-tips. Here is a four-page catalog designed to aid you in selecting the best types and styles of open steel flooring for your particular construction project.

IN THIS CATALOG YOU'LL FIND

Tables of Safe Loads
Specifications required for open steel flooring installation
Types of Tri-Lok Open Steel Flooring available
Information concerning construction, sizes, strength and adaptability of Tri-Lok Open Steel Flooring

FOR YOUR COPY, WRITE FOR BULLETIN PW 1102-24

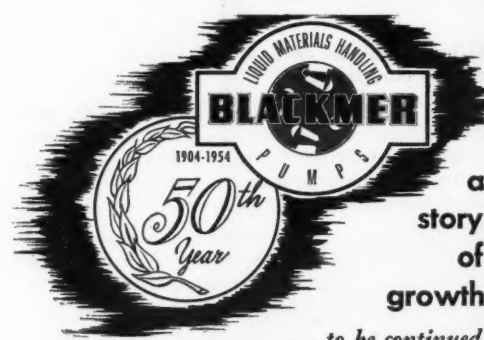


**DRAVO
CORPORATION**

National Distributor for THE TRI-LOK CO.

Dravo Building, Fifth and Liberty Avenues, Pittsburgh 22, Pa.

When inquiring check CP 7423 on handy form, pgs. 2-3



a
story
of
growth

... to be continued

Blackmer's growth has been earned by the development and manufacture of products backed by 50 years of constant laboratory and field research. These products include industrial bulk pumps, truck pumps, hand pumps, strainers and fluid motors. Blackmer's advanced design, smooth operation, economy, and flexibility of use... have been performance proved throughout the last half century. Wherever liquids are handled, Blackmer pumps are known for quality, dependability and record durability. And now, new products soon to be announced promise a new standard of performance. Our engineers can solve your liquid materials handling problems... write for details today!



liquid materials handling

BLACKMER

Industrial, Hand and Truck Pumps, Strainers, Pressure Control Valves
BLACKMER PUMP COMPANY, GRAND RAPIDS 9, MICH.
DIVISION SALES OFFICES—NEW YORK • ATLANTA • CHICAGO
GRAND RAPIDS • DALLAS • WASHINGTON • SAN FRANCISCO
See Yellow pages for your local sales representative

When inquiring check CP 7424 on handy form, pgs. 2-3

CHEMICAL PROCESSING

Service for certification of Teflon announced by manufacturer

Comprehensive system of quality control and certification has been instituted for Teflon rods, sheets, tubes, and finished parts produced by manufacturer. System will enable user of Teflon to obtain test reports on any particular lot of material ordered.

Tests, made in conjunction with U. S. Testing Laboratories, cover power factor, dielectric constant, dielectric strength, porosity, tensile strength, and elongation. System is approved by USAF under MIL-Q-5923.

(Manufacturer is Resistoflex Corp., Dept. CP, Belleville, N. J.)

Pictures show turret lathe

Turret lathe having 16" swing, 13/8" spindle bore and 1" collet capacity is illustrated and described in 4-page bulletin. Photos show lathe in use, and point-up its outstanding features.

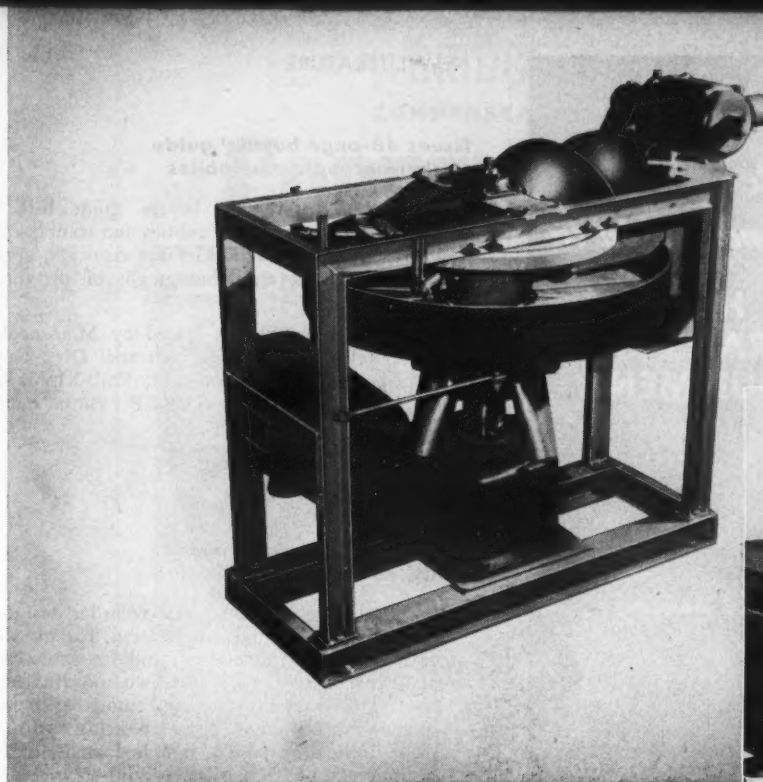
Cat 5312 is issued by South Bend Lathe Works, Dept. CP, 425 E. Madison St., South Bend 22, Ind. When inquiring specify CP 7425 on handy form, pages 2 and 3.

Info on gas, gas-diesel, and diesel engines

Twelve-page bulletin provides complete data and specifications on 4-cycle engines of 15 1/2" bore and 22" stroke. Engines are operated by gas, gas-diesel, and diesel, atmospheric or supercharged, and are rated from 690 to 2500 hp.

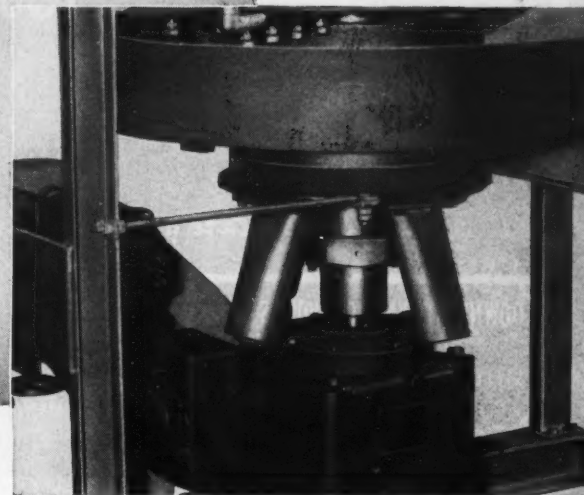
Bul L-71 is issued by Cooper-Bessemer Corp., Dept. CP, Mount Vernon, Ohio. When inquiring specify CP 7426 on handy form, pages 2 and 3.

For more information on product at right, specify CP 7427 ... see information request blank between pages 2 - 3.



Center-Mounted Drive

is self-contained, mounted in main frame. No costly separate foundations. Drive and main bearing are enclosed, protected from splash, corrosion and mechanical damage. All units readily accessible for servicing.



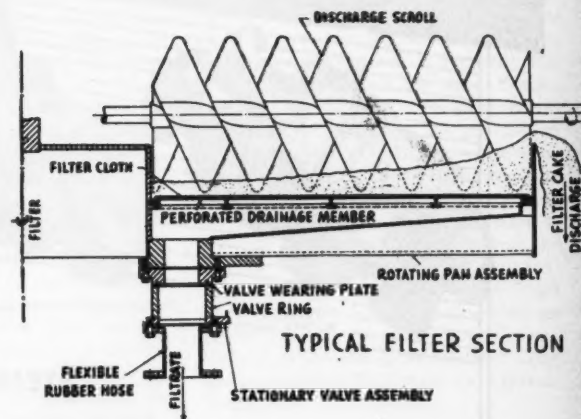
FEinc Introduces Horizontal Rotary Filter

SIMPLEST, FASTEST, for Free-Filtering Materials

Ideally suited for continuous filtration of free-filtering materials such as coarse crystalline materials and fibrous pulps, this new FEinc Horizontal Rotary Vacuum Filter offers six big advantages:

(1) Filtering and washing operations are visible and readily controllable; (2) Hourly output per square foot surface is extremely high; (3) Many combinations of washing techniques can be set up, including multiple-stage washing and counter-current washing to give greater soluble recovery with minimum dilution; (4) Cake thicknesses up to 4" and more can be handled; (5) Simpler installation with central-mounted drive units which eliminate costly separate foundations; (6) Adaptable to totally enclosed construction and special materials including rubber-covered steel.

Developed by the makers of the famous FEinc String Discharge Filter, the new FEinc Horizontal Rotary Filter has been thoroughly field tested and is now ready to go to work for you. Unit illustrated is 3' dia., with filtering area of 7.6 sq. ft. Larger sizes up to 110 sq. ft. (and above if required). Ask for Bulletin 201. Write to Filtration Engineers Inc., 155 Oraton St., Newark 4, N. J.



How it works: Basically it's a revolving table or pan, the inside bottom of which is divided into wedge-shaped hollow sections covered with filter cloth or screen. Each section is connected to a valve mechanism that progressively controls the sequence of dewatering and washing operations as the table rotates. At feed point, slurry flows evenly over surface, liquid is drawn out rapidly, leaving thick cake on the filter media. At next stage wash liquor is flooded evenly over surface and drawn down through cake. Finally, dewatered cake is lifted by revolving scroll and dropped into chute.

FILTRATION



ENGINEERS, INC.

DOWNINGTOWN IRON WORKS, INC.
...this symbol denotes
unsurpassed Craftsmanship in
HEAT TRANSFER EQUIPMENT

Useful literature yours for the asking!

DOWNINGTOWN IRON WORKS, INC.
DOWNINGTOWN, PA.
STEEL - ALLOY PLATE FABRICATION
HEAT EXCHANGERS

division of
PRESSED STEEL TANK CO.
MILWAUKEE, WIS.

NEW YORK OFFICE: 30 CHURCH ST.

When inquiring check CP 7428 on handy form, pgs. 2-3

ROTARY UNION
(Reg. Trade Mark)

TYPE "FSG" ROTARY UNION
(Flange syphon type with all-graphite bearing construction)

TYPE "S" ROTARY UNION

A REVOLVING STEAM CONNECTION
Pipe sizes 1/4" through 3"

Wherever revolving equipment is heated or cooled, the ROTARY UNION does the job right. 40 standard models and sizes. Call our nearest office for recommendations or write Dept. 3C for our catalog.

"Where Good Connections Count"®

PERFECTING SERVICE COMPANY

332 Atand Avenue (Home Office and Factory) Charlotte, N. C.
Atlanta, Chicago, Cleveland, Providence, New York, Montreal, Toronto

When inquiring check CP 7429 on handy form, pgs. 2-3

NEW LITERATURE

Issues 48-page buyers' guide to thermocouple assemblies

Comprehensive 48-page buyers' guide lists all general thermocouple assemblies and components. Profusely illustrated booklet has cutaways, application diagrams, and photographs of pyrometer supplies.

Buyer's Guide 100-5 is issued by Minneapolis-Honeywell Regulator Co., Industrial Div., Dept. CP, Wayne and Windrim Ave., Philadelphia 44, Pa. When inquiring specify CP 7430 on handy form, pages 2 and 3.

Plots graphs from keyboard, cards, computers

Booklet describes plotter and recorder designed for display of digital information, for plotting of transistor characteristics, and for calibration of a flow meter. Unit is a two coordinate recording instrument for continuous curve recording or discrete point plotting. Inputs from decimal keyboard, punched cards, digital computers, or variety of analog inputs including polar coordinates are accepted.

"X-Y Plotter" is issued by Librascope Inc., Dept. CP, 1607 Flower St., Glendale, Calif. When inquiring specify CP 7431 on pages 2 & 3.

Shows uses for liquid-level and air-flow detector

Application ideas, installation tips, and suggested circuits for using device that controls or detects both liquid level and air flow are presented in 16-page illustrated booklet. Principle of operation is explained. Specifications and response curves are included.

"Detect-A-Flo Control" is issued by Fenwal Inc., Dept. CP, 218 Pleasant St., Ashland, Mass. Specify CP 7432, pages 2 and 3.

Shows rubber pumps, valves, fittings

Buna N and natural hard rubber pumps, valves, and pipe fittings manufactured specifically for chemical process and allied industries are described in 4-page bulletin. Physical properties and chemical resistance data are given along with performance data tables and specification charts.

"Buna N Valves and Fittings" is issued by Vanton Pump & Equipment Corp., Dept. CP, Empire State Bldg., New York 1, N. Y. When inquiring specify CP 7433 on handy form, pages 2 and 3.

ROSS DURABILITY & DEPENDABLE SERVICE

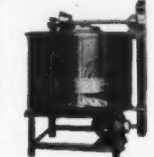
Over 80 years of Ross experience in the manufacture of Mills and Mixers of all types assures the proper selection of equipment to fit your specific processing requirements.



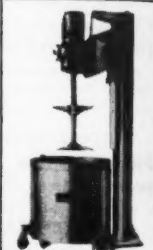
#36—LIQUID MIXER



#30C—CHANGE CAN MIXER



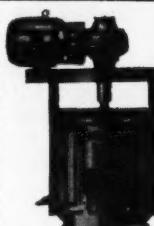
#36D—DRY MIXER



#131AB — CHANGE TANK MIXER



#36RM—TWIN SEMI-PASTE MIXER



#132—HEAVY DUTY PASTE MIXER



#41L—STEAM-JACKETED HEAVY DUTY KNEADER



#130EL—VARIABLE SPEED LABORATORY MIXER



#42—HORIZONTAL MIXER

Mixers available in laboratory, pilot scale, and large production sizes.

Write for further details!

CHARLES ROSS & SON COMPANY

150-152 CLASSON AVENUE
BROOKLYN 5, N. Y.

When inquiring check CP 7434 on handy form, pgs. 2-3

CHEMICAL PROCESSING

Pocket-size calculator solves duct design problems

Pocket-size calculator has been prepared for solving air-flow pipe-size problems. Starting with the known factors of air volume (cfm) and air velocity (fpm), the friction loss per 100' of duct ("water) and required round duct diameter or rectangular duct dimensions (") can be read off directly on calculator scales.

Duct size calculator is issued by Entoleter Division, The Safety Car Heating and Lighting Company, Inc., Dept. CP, P. O. Box 904, New Haven 4, Conn. When inquiring specify CP 7435 on handy form, pages 2 and 3.

Discusses general process of vacuum forming

Illustrated 4-page bulletin gives details of automatic cycle vacuum forming machine for sheet plastics. In addition to giving features, operation, and specifications for the machine, publication also discusses general process of vacuum forming, including mold material and design, advantages of process and applications.

Bul for Model 50-20 Vacuum Forming Machine is available from Vacuum Forming Corp., Dept. CP, Port Washington, N. Y. When inquiring specify CP 7436 on handy form, pages 2 and 3.

Bibliography on air pollution

This second semi-annual supplement to the "Air Pollution Abatement Manual" is an up-to-date guide to growing literature on air pollution and techniques being developed to bring about cleaner air. A revised cumulative index appearing with this supplement includes a new classification — lawsuits.

Air Pollution Abatement Manual, Chap. 12 — bibliography, appendix 2, is available by remitting 35c direct to Manufacturing Chemists' Assn., Inc., Department CP, 246 Woodward Building, Washington 5, D. C.

Several thermometer types explained, illustrated

Two color, 16-page catalog presents technical data, details of construction, temperature scale ranges, and various forms of both mercury and bimetallic thermometers. A complete listing of thermometers for installation in ducts, piping, pressure vessels, etc., is included. Several types of construction are offered in order to accommodate most industrial situations.

Bul E-2 is issued on letterhead request to Precision Thermometer & Instrument Co., Dept. CP, 1434 Brandywine St., Philadelphia 30, Pa.

BRIDGEPORT BRASS COMPANY

CONDENSER AND HEAT EXCHANGER TUBE EDITION

COPPER ALLOY BULLETIN



MILLS IN BRIDGEPORT, CONN. AND INDIANAPOLIS, IND. — IN CANADA: NORANDA COPPER AND BRASS LIMITED, MONTREAL



Retubing condenser with special tools—Courtesy Condenser Service & Engineering Co., Inc., Hoboken, N. J.

Performance Surveys Increase Condenser Tube Life

Keeping careful and complete records of tube performance in each unit is good practice. The information obtained is valuable in many ways:

1. To determine the life cycle of a particular tube alloy so that retubing can be anticipated and shut-down time minimized.
2. To reveal the changes in the character of the circulating water and its effect on tube life.
3. To study changes in operating conditions with the objective of lengthening tube life.
4. To compare the behavior of different tube alloys under operating conditions as an aid to retubing with a longer-lasting alloy.

Improved Results Through Records

Many examples show surveys have led to lengthened tube life, improved heat transfer and greater tube efficiency. A plant operating its surface condensers on an intermittent basis for many years received satisfactory service from Admiralty. When it changed to a continuous basis and with a somewhat higher water velocity, Admiralty failed in two years as compared with six to twelve years previously. This plant changed to

Aluminum Brass and now gets tube life comparable to Admiralty under intermittent service conditions.

In an oil refinery it was found that the product was considerably more corrosive toward copper-base alloys than toward steel due to the presence of large amounts of ammonia. However, the steel corroded rapidly on the water side. By changing to Duplex tube, consisting of steel to the product side and Red Brass to the water side, tube life was increased from four to five times.

Information Helps Find Key to Corrosion Attack

Corrosion, the greatest enemy of tube life, is most difficult to pin down since it is influenced by many variable conditions. Here information about operating procedures, composition of the water, steam, gas, product, temperatures, velocities, etc., plays a vital role in tracking down and correcting conditions that lead to corrosion and in finding the right alloy to withstand corrosive attacks.

Information on tube performance is especially valuable where failures are localized in some section of a condenser or heat exchanger, such as at the inlet

end of the tubes, because a change in operating conditions or a better tube alloy is indicated. For example, excessive inlet end corrosion of Admiralty tubes can be reduced by changing to Aluminum Brass or Duralon IV (Aluminum Bronze). Where general corrosion (thinning) occurs along the entire length of the tubes, a change to a more corrosion-resistant alloy such as Aluminum Brass, Duralon IV, or Cupro Nickel may be indicated. The selection of the most suitable alloy can be determined from tests on sample tubes of different alloys.

Our Corrosion Laboratory is available for advising which alloy will give the longest service life for specific operating conditions.

Information concerning the performance of the tubing from data sheets should be sent along with the tube sample or samples. The tube alloy, character of circulating water and its temperature range, velocity, product handled, length of service, etc., are, of course, necessary in helping to diagnose tube failure.

Proper Sampling

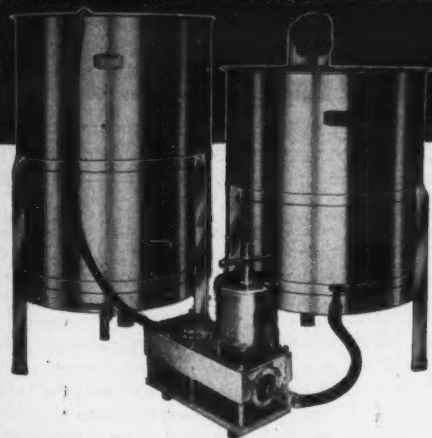
When submitting samples for Laboratory examination, it is important that a full length tube be submitted because a short piece may not be representative, since corrosion attack is generally not uniform throughout the tube. Consequently, the inlet end of the tube should be identified as well as the position of the tube and its location in the condenser or heat exchanger. A scratch line should be drawn on the outside of the tube along the top. When the tube is cut into shorter lengths for mailing, the pieces should be numbered progressively from the inlet end. We have listed specifically the information needed on pages 109 to 111 (Questionnaire on Tubes) of the Bridgeport Brass "Condenser and Heat Exchanger Tube Handbook."

Technical Service Available

When considering retubing or when you have a tube corrosion problem, contact our nearest Sales Office. Write for your copy of the Bridgeport "Condenser and Heat Exchanger Tube Handbook" on Company stationery. (1173)

When inquiring check CP 7437 on handy form, pgs. 2-3

When Your Process Demands **FILTERING** **MIXING** **STORING**



LOOK FOR THESE FEATURES

PROVED, LOW-COST OPERATION
EASY TO CLEAN
DEPENDABLE, TROUBLE-FREE
PERFORMANCE
ALL SIZES AND CAPACITIES
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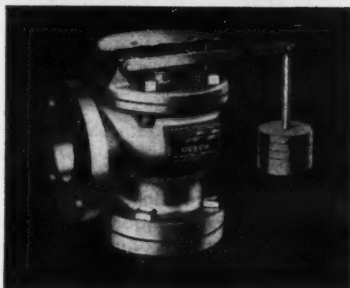
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THE CHEMICAL AGE

(Continued from page 5)

energy, as applied to war, can be more than offset by the constructive possibilities applied in peace.

I think it is fair to say that not even our heavy expenditure of creative talent in the field of weapons represent a complete loss in terms of creating the better world of the future. In any event, the hostile actions and attitudes of the Soviet Union, at least up to the present time, have left us no real alternative to the course which we are following. It is, therefore, essential that the chemical industry continue to be big enough and strong enough to meet both the needs of national defense and the ever increasing needs of the civilian economy. This means, among other things, more basic research, coupled with wise and far-seeing application by progressive managements.

It is worth pointing out, however, that for the time being at least there is a definite limit to the number of technically trained experts who are available to us. Accordingly, the tremendous number of man-hours and man-years of research that the industry has devoted and is devoting to national defense necessarily represents, to some extent, a delay in the achievement of many of the constructive goals that still lie ahead of us in the field of applied chemistry. Perhaps the chemist who has developed a new rocket fuel to power a guided missile with an atomic warhead is the very man who might otherwise have discovered a polio vaccine a few years ago. The simple and inescapable conclusion to be drawn is that we must work towards a continuing expansion in the number of technically trained people, for it seems inevitable that these twin demands of national defense and the civilian economy will be with us for many years to come.

A major challenge that faces us was summed up in the Report of the President's Materials Policy Commission, generally referred to as the Paley Report. This Report, which stressed the fact that the United States is rapidly becoming a have-not nation in terms of many crucial raw materials, placed great reliance on the ability of the chemical industry to fill the gap thus created. This challenge may be regarded as the greatest that faces us, as far as matters primarily internal to the United States are concerned. But when we turn to matters primarily external to our country, we find challenges equally as great. Throughout the world, there are vast areas that are sometimes described as underdeveloped. Given a reasonably favorable climate of international relations, many of these underdeveloped areas could, in a relatively short period of time, become highly productive.

The possibilities are incalculable, but unless we meet the challenge with real foresight and wisdom, our ventures in this field may rebound to our detriment rather than our advantage. Whether the challenge will be met and the possibilities realized depends in large degree on the wisdom and prudence of the policies pursued by the people of the United States. Here applied chemistry must walk hand in hand with applied and practical democracy.

In our abundant land we are limited by no barriers



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CHEMICAL PROCESSING

but our ingenuity and the extent of our faith in the American ideal. We live in a society where progress knows no bounds. The chemical industry presents a striking example of the ability of a free economy in a democratic society to serve the needs of its people, and often to surpass their fondest hopes.

To the world we must demonstrate our faith in freedom and our resolution to keep it. In meeting the challenges of the frontiers of technology, applied chemistry has made, and will continue to make, its great contributions. We are an industry which supplies products used in every walk of life, and each year we provide hundreds of new items which mean better defense and better living for the entire free world.

The chemical industry is a big industry — a great industry. Greatness imposes responsibilities of equal magnitude. We of the chemical industry must dedicate ourselves to the discharge of our responsibilities so that our cherished objective — the betterment of mankind — shall be a never-ending achievement.

Instrument and lab equipment newsletter series announced

Testing instruments and laboratory equipment designed for use in ceramic, leather, oil, paint, plastics, and rubber industries are described in newsletter series. Publications are four pages, illustrated in two colors.

"Newsletter" is issued by Gardner Laboratory, Inc., Dept. CP, 4723 Elm St., Bethesda 14, Md. Check CP 7440, pages 2 and 3.

Folder details lab planning, facilitates scale design

Illustrated 4-page folder outlines suggestions for planning and designing laboratories. Also included is lab planning kit with guide rule designed to trace standard lab furniture on scaled planning sheets provided.

"Plan-A-Lab" folder is issued on letterhead request by Metalab Equipment Corp., Dept. CP, 224 Duffy Ave., Hicksville, L. I., N. Y.

Outline equipment for control

Eight-page bulletin gives concise description and photos of manufacturer's feeders, proportioning units, recorders, controllers, etc. Request card permits detailed information to be obtained on items of interest.

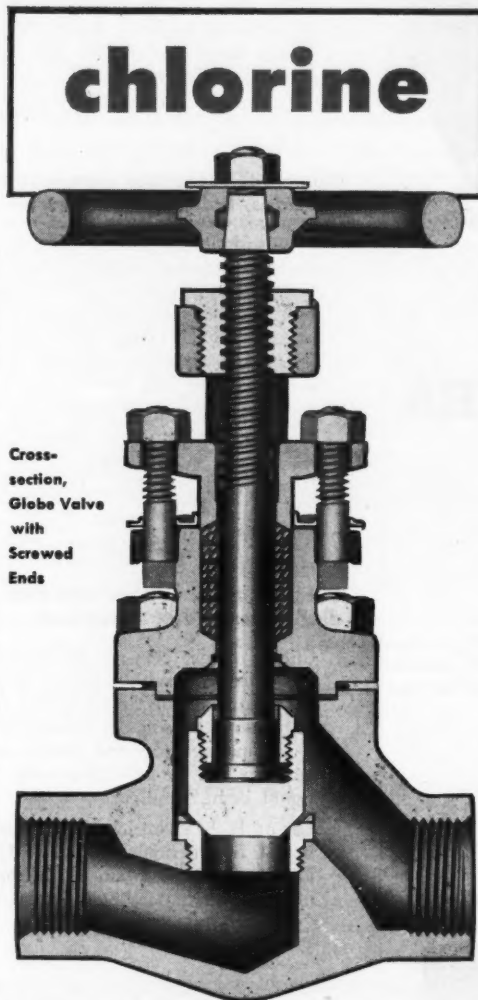
Bul B-I-F 3 is issued by B-I-F Industries, Dept. CP, P. O. Box 1342, Providence 1, R. I. When inquiring specify CP 7441, pages 2 and 3.

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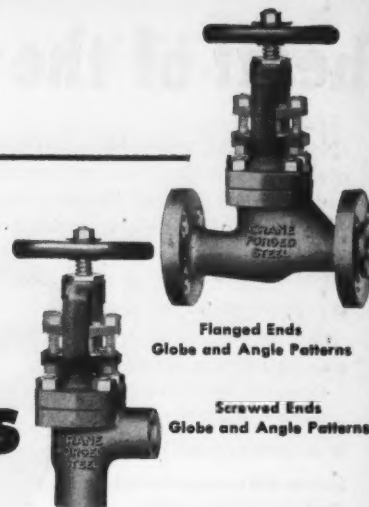
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When inquiring check CP 7442 on handy form, pgs. 2-3



heart of the strainer

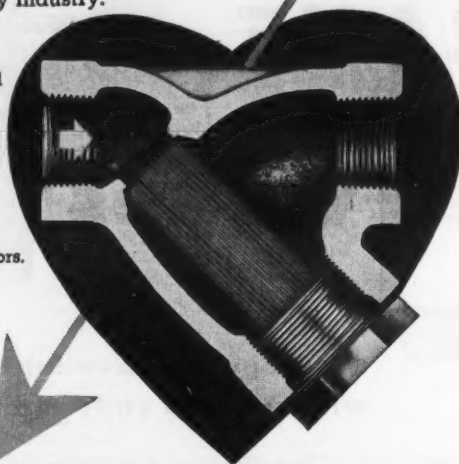
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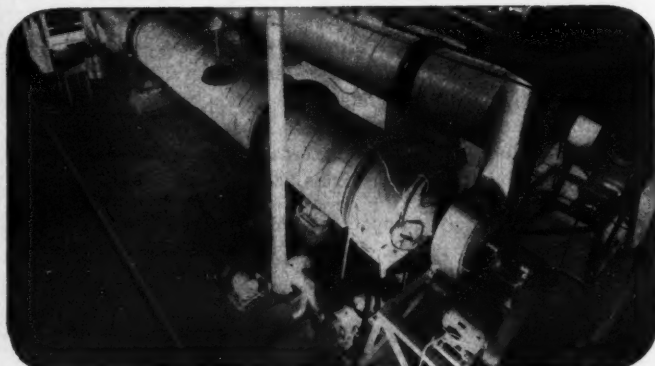
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NEW LITERATURE

Blotter-size chart indicates valve arrangements

Plastic chart shows port and stop arrangements of multiport valves. Front offers diagrammatic sketches of four types of multiport valves, each with a revolving plastic disc attached to illustrate fluid traffic control combinations. Rear of chart illustrates still other positions possible with different multiport arrangements.

Nordstrom Valve Chart is issued by Meter & Valve Div. of Rockwell Mfg. Co., Dept. CP, 400 N. Lexington Ave., Pittsburgh 8, Pa. When inquiring specify CP 7445 on handy form, pages 2 and 3.

Illustrates, describes complete line of scales, balances, accessories

Trip scales and general laboratory balances and analytical, torsion, spring, specific gravity and special purpose balances are included in the complete line of weighing units described in 40-page bulletin. Also included in contents of the publication are weights and other accessories used in this type of operation.

Bul 15C is issued by Central Scientific Co., Dept. CP, 1700 Irving Park Rd., Chicago 13, Ill. When inquiring specify CP 7446 on handy form, pages 2 and 3.

Uses of cutless rubber bearings diagrammed and described

Cutless rubber bearings for industrial equipment are described and illustrated in 34-page catalog. It contains engineering data and recommendations as to use of bearings in various types of units such as pumps, agitators and similar equipment where bearings can be lubricated with water or by the liquid being handled.

Cat on B. F. Goodrich Cutless Rubber Bearings is issued by distributors, Lucian Q. Moffitt, Inc., Dept. CP, 333 S. Main St., Akron, Ohio. When inquiring specify CP 7447, pages 2 and 3.

Features high-pressure tube and pipe fittings

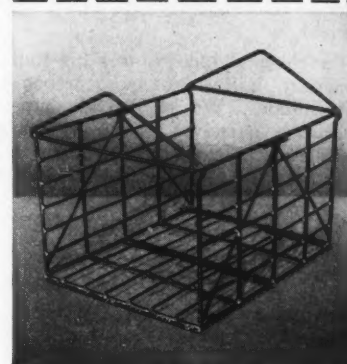
Complete line of manufacturer's high-pressure tube and pipe fittings are described in 28-page catalog. Cutaway drawings and photos supplement text. Engineering tables include complete specifications on all fittings, and helpful facts are given regarding selection of tubing, bending of tube, and joint making.

Cat 553 is available from Flodar Corp., Dept. CP, 1321 E. 45th St., Cleveland 3, Ohio. When inquiring specify CP 7448 on handy form, pages 2 and 3.

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CHEMICAL PROCESSING

Convention & Exhibit

Schedule

1954

Mar. 1-2. The Chemical Institute of Canada, 3rd Divisional Conference, Chemical Engineering Division, Montreal.

Mar. 1-5. Analytical Chemistry Group (ACS) and the Spectroscopy Society of Pittsburgh, 5th Annual Pittsburgh Conference on Analytical Chemistry and Applied Spectroscopy, Hotel William Penn, Pittsburgh, Pennsylvania.

Mar. 4-5. American Society for Metals, Mid-Winter Meeting, Boston, Mass.

Mar. 8-10. American Institute of Chemical Engineers, Washington, D. C.

Mar. 8-11 National Electrical Manufacturer's Association, Annual Meeting, Edgewater Beach Hotel, Chicago, Ill.

Mar. 10-12 The Society of the Plastics Industry, Inc., Pacific Coast Section Conference, Hotel Del Coronado, Coronado, Calif.

Mar. 11-13. Air-Conditioning and Refrigeration Institute, Educational Conference, Municipal Auditorium, Long Beach, Calif.

Mar. 15-19. National Association of Corrosion Engineers, 1954 Conference and Exhibition, Kansas City, Missouri.

Mar. 17-18. Commercial Chemical Development Association, Annual Open Meeting, Hotel Statler, New York City, New York.

Mar. 18-20 American Physical Society, Division of High Polymer Research, 12th Meeting, Detroit and Ann Arbor, Michigan.

Mar. 22-25 Institute of Radio Engineers, Radio Engineering Show, Kingsbridge Armory, New York City.

Mar. 24-Apr. 1. American Chemical Society, 125th national meeting, Kansas City, Missouri.

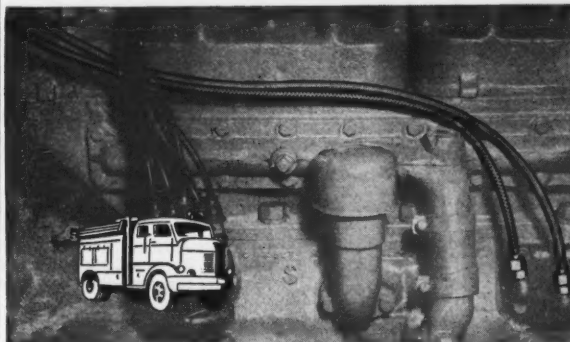
Apr. 5-6. The Society of the Plastics Industry (Canada) Inc., 12th Annual Conference, Mount Royal Hotel, Montreal, Canada.

Apr. 5-8. American Management Association, 23rd National Packaging Exposition, Auditorium, Atlantic City, New Jersey.

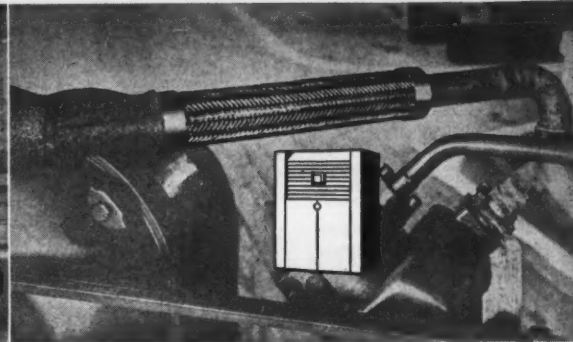
Apr. 14-16. American Chemical Society, Division of Rubber Chemistry, 65th meeting, Brown Hotel, Louisville, Kentucky.

Apr. 22. Conference on Instrumentation in Water, Sewage, and Industrial Waste Treatment, Civil Engineering Dept., Manhattan College, New York City.

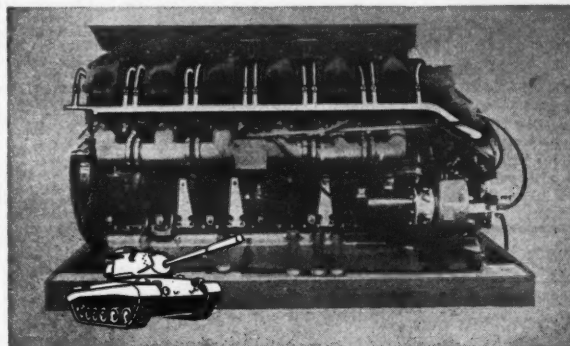
These 4 may end your design worries, too



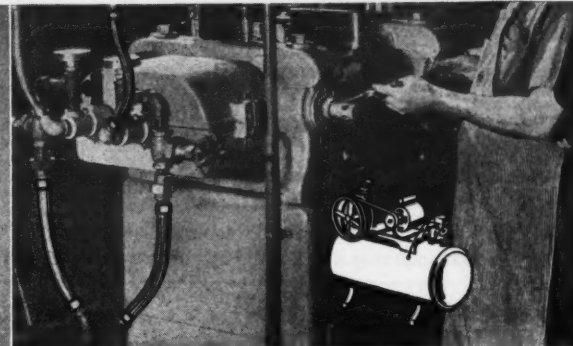
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Discussed in This Issue ---

PROCESSES, EQUIPMENT and MATERIALS

Use this "quick-locator" when you want information on a specific type of process, equipment or material mentioned in the processing stories or the advertisements in this magazine. Everything discussed in this issue is given here, if you want more data you can write manufacturer direct... or turn to pgs. 2-3 and use the handy "Information Request Slip." This is a special service provided by the publisher... no obligation or charge, of course. The publisher contacts the proper manufacturers for you—information comes to you direct.



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CHEMICAL PROCESSING

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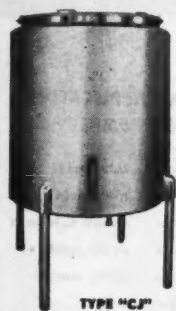
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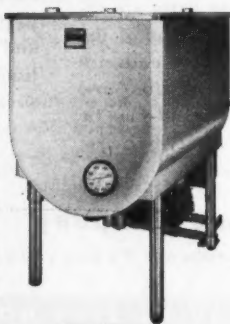
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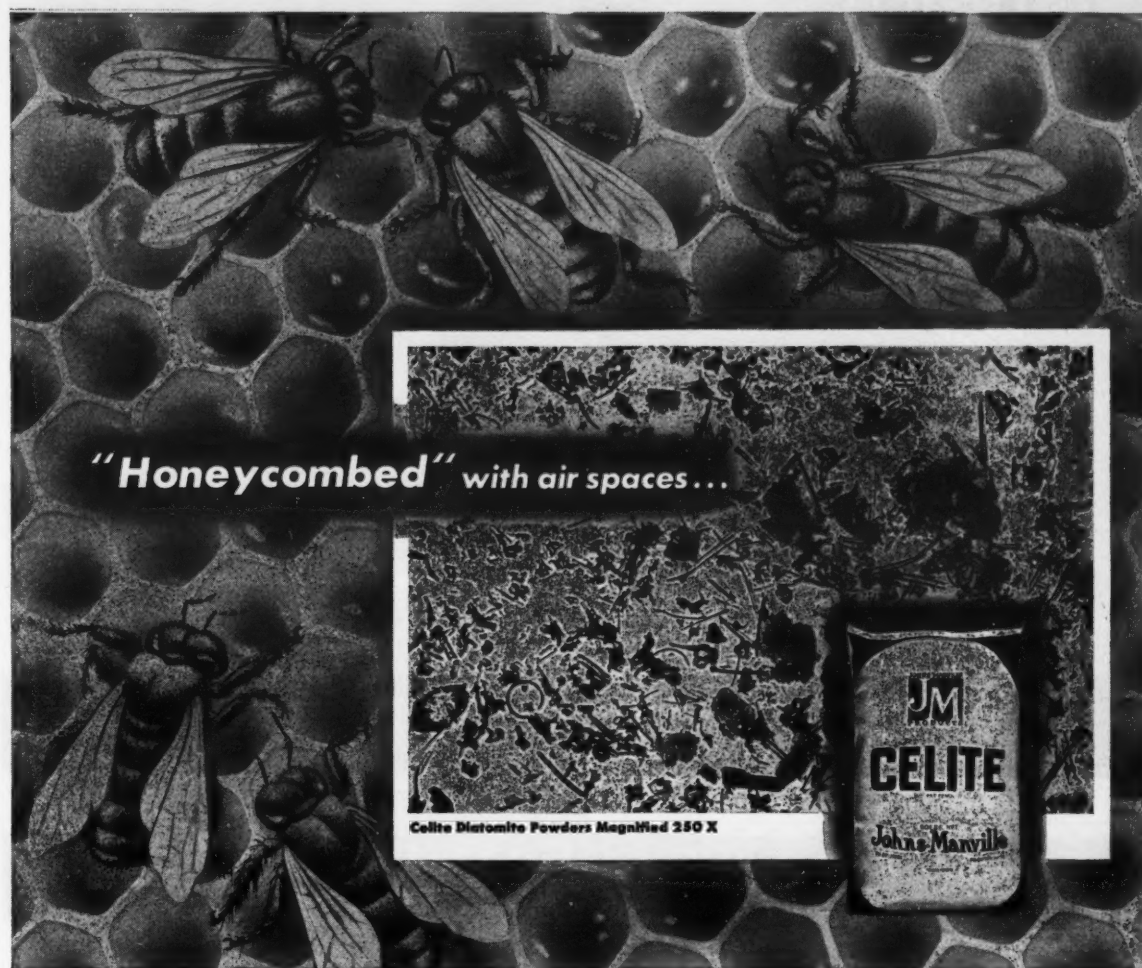
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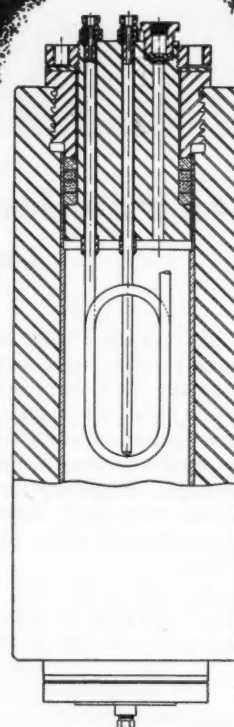
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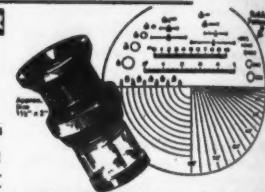
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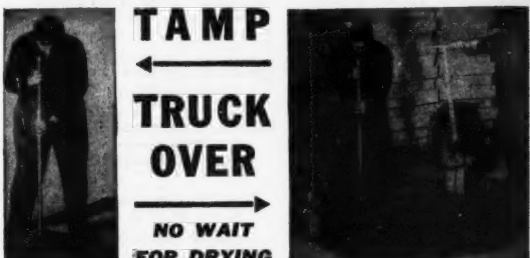


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CHEMICAL PROCESSING

"That's Interesting"

Smaze days

No matter what you call it — smog, smaze, or mist — it's nasty stuff. But a General Electric scientist has come up with a device that at least tells when smaze is likely to be around. His instrument measures condensation nuclei — minute air-borne particles on which water will condense. Further, he can tell what proportion of those particles will readily form the tiny water droplets causing smaze. All of which doesn't help smarting eyes — although it will help research on the problem.

Precious fire

In the old days, the cave man was very careful of his fire and its glowing embers, for with their extinction, his extinction was more likely. Curiously enough, even today when matches are literally given away, very few are wasted. It is reported that out of 9000 discarded match books collected from Chicago streets recently, only seven contained unused "fire." (*Dyelines and Bylines*)

Hats on . . . to plastic

It's going to people's heads in the form of men's caps now available in red and blue plaid. These color-fast chapeaux won't stain, are impervious to perspiration and weather, and are unharmed by creasing or rolling. (*Dyelines and Bylines*)

Dig (up) those crazy weeds

"Loco weeds," the pea-like herbs that poison cattle, are a potential source of the scarce element selenium — an important raw material of the electronics, petroleum, and rubber industries. (*Industrial and Engineering Chemistry*, Aug 1953)

What a spot for Gunga Din

Statistics are often dry, but here is a wet one to conjure with: one New York hotel, it is reported, uses close to 600,000 gallons of water a day. That's enough to supply a city of 45,000 people for a day . . . or the equivalent amount of water used in 10,000 homes. (*Gould Battery News*)

Land, lots of land

Millions are employed by the chemical and allied industries, and they themselves are employers—of land. A current statistic divides the 1.9 billion acre land area of the US as follows: 700 million acres suitable for grazing; woodlands take up 600 million; 409 million can be planted with cultivated crops; men and the things they have built cover another 115 million; and the rest (75 million acres) is classified as "non-agricultural." The quotes do not, of course, refer to that back-yard garden you had last summer.

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If you're having corrosion problems investigate these new fittings adaptable to many uses . . . and watch for announcement of JACOX' expanded line of allied products. For information on quantity prices and delivery write JACOX CORPORATION, 407 Cleveland Avenue, Saginaw, Michigan.

* Rigid polyvinyl chloride
** Chemical property chart will be furnished on request

MECHANICAL PROPERTIES

Tensile Strength, psi. 8,500 to 9,000
Compressive Strength, psi. . . 11,000 to 12,000
Compressive Yield Stress, psi. 10,000 to 11,000
Flexural Strength, psi. 13,000 to 14,000
Yield Strength
in Flexure, psi. 10,000 to 11,000
Izod Impact Strength, Notched,
ft.-lbs./in. 0.5 to 19.0
Rockwell Hardness, R Scale . 117 to 120
Shore Hardness, D Scale 85

THERMAL PROPERTIES

Heat Distortion Temperature
at 66 psi., C. 73-75

MISCELLANEOUS PROPERTIES

Water Absorption in % Increase at
75°F. — 24 hrs.032
Specific Gravity 1.40-1.5
Flammability — Self extinguishing.

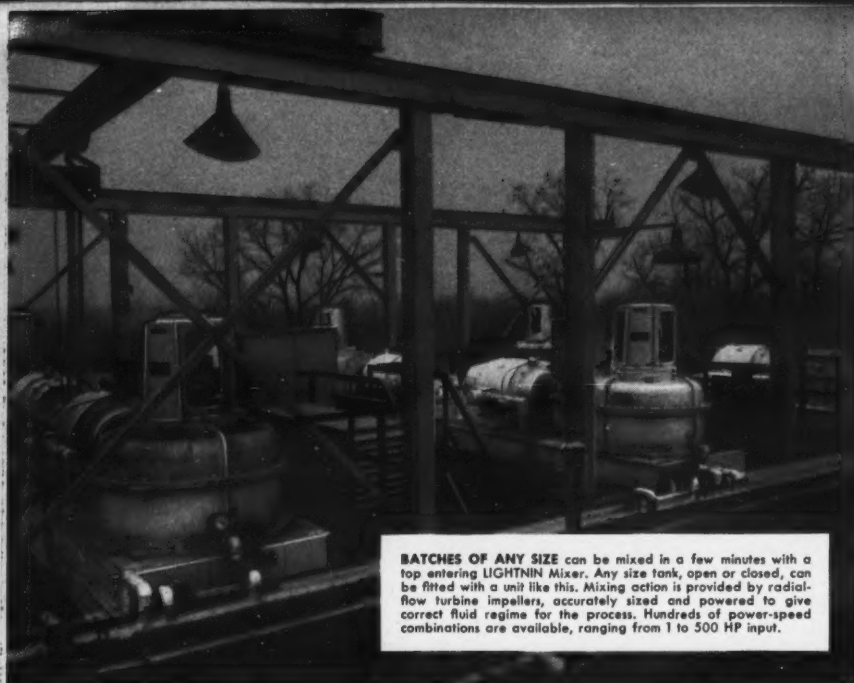


JACOX
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407 Cleveland Avenue
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When inquiring check CP 7468 on handy form, pgs. 2-3



BATCHES OF ANY SIZE can be mixed in a few minutes with a top entering LIGHTNIN Mixer. Any size tank, open or closed, can be fitted with a unit like this. Mixing action is provided by radial-flow turbine impellers, accurately sized and powered to give correct fluid regime for the process. Hundreds of power-speed combinations are available, ranging from 1 to 500 HP input.

How to choose a fluid mixer

For best fluid mixing results, choose a mixer that:

1. gives you the right balance between fluid *flow* and fluid *shear* for the process
2. requires the least horsepower to do the job
3. pays off in years of maintenance-free service.

You get *all three* with LIGHTNIN Mixers.

Selection of the right mixing action for your process is based on test data *guaranteed accurate*.

You can be sure all the power you buy goes into the batch.

Efficient use of power is assured by special load-test equipment, plus widest possible choice of standard mixer power-speed-torque combinations.

You get engineering refinements such as flex-protected gearing, interchangeable speeds, simple repacking, easy replacement or change of components—all adding many years of useful life to the mixers you choose—when you choose LIGHTNINS.

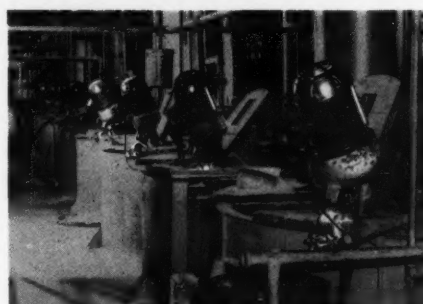
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